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DO THE OPERATIVE MORTALITY AND THE SEQUELAE JUSTIFY OPERATIONS ON BORDERLAND GALLBLADDER CASES?

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It is not our intention to discuss frank, acute cholecystitis, accompanied by fever, pain, and acute tenderness in the region of the gallbladder. Neither is it our intention to discuss the type of cholecystitis occurring during, or following, attacks of gallstone colic. We wish to discuss a group accompanied by more or less indefinite symptoms, with moderate tenderness and indefinite pain in the region of the gallbladder, usually occurring in women of neurotic temperament though occasionally we see the same symptoms and have the same experience with men. This group and the group with definite acute cholecystitis and gallstones, in recent years have been included under the title of "gallbladder disease".

Why one should say "gallbladder disease", when one doesn't say stomach disease, or appendix disease, or intestinal disease, we do not know; it is a very popular term, is very vague, and is of far reaching significance.

There seems to be no very definite agreement as to any particular symptom complex upon which might be based a diagnosis of "gallbladder disease", aside from gallstones, or definite cholecystitis accompanied by fever. Mixson[1] mentions approximately ninety-six different symptoms which are indicative of "gallbladder disease".

We are being advised that these patients should be operated upon very early, and that, if they are not improved after operation, it is because they were not operated upon sufficiently early. It is stated that, because of this neglect, these patients acquire hepatitis, cholangitis, pancreatitis, heart disease, rheumatism and all the other manifestations of metastatic focal infection. We are inclined to believe there has been built up around this ambiguous term, a lot of unproved theories that are now considered by some as facts. Some of the most experienced surgeons state frankly that they often operate for so-called "gallbladder disease", and, with the gallbladder exposed, find that it looks entirely normal and feels entirely normal but they go ahead and remove it. Sad to state, many of these patients are not relieved of the symptoms that caused them to consult the surgeon. They are then told that the operation was not done early enough, and that they had cholangitis, pancreatitis, hepatitis, and so forth. Much of this unproved pathology has been built up by the surgeon himself, by stating at the time of the operation that there was hepatitis, cholangitis and pancreatitis, without any definite proof whatsoever. Those who have accepted this so-called pathology have naturally been led to believe that it was all due to "gallbladder disease", and for that reason operation should have been done very early and before irreparable damage had taken place. We must confess that we have been unable to cultivate a sufficient tactile or optical sense, to say, off-hand, that there were present these various diseases attributed to the gallbladder. The constant repetition of this dogma has caused it to be accepted as real and serious pathology.

We are led to believe, from much of the current literature written by the gallbladder enthusiasts, that it is only neccessary to operate and operate early. They never suggest that there is any mortality following operation, or any failure, to make the existence of the patient and surgeon miserable for years afterwards.

It must be remembered that cholecystectomy has a mortality of from 5 to 7 per cent in the cities of one hundred thousand or less.

Of course, in the large clinics, they have a much smaller percentage of the acute cases; consequently they have a much lower mortality rate. The mortality rate for all operators in the city of El Paso, for five years, including 1930, was 7.3 per cent. Records of some individual operators were considerably less, but we have to deal with the general average. Unfortunately, the patient in one of these borderland cases, who walks into the hospital laughing and joking, often makes his or her contribution to this mortality.

One recent writer went so far as to say, out of eighteen hundred routine cases he had examined, six hundred of them, or one-third, were suffering from "gallbladder disease", and, as he believes in early operation, it would mean one out of every three would become a surgical case.

Since the x-ray entered the diagnostic field of "gallbladder diseases", a so-called "atonic gallbladder" has added one more sign to those indicative of "gallbladder disease", and by many this is taken seriously as being a very definite indication for operation. So-called atonic gallbladder symptoms may be due to other atonic organs, such as the stomach or colon. We are not advocating operation for atonic stomach or atonic colon very often.

Dr. Judd[2] states that "there seems to be some difference of opinion as to the standards adopted in making x-ray diagnosis of atonic gallbladder. Many of these gall-bladders are found, at operation, to be microscopically normal and without cystic duct obstruction". He further states that it must be constantly borne in mind that the test conducted by the x-ray and opaque dyes is a functional test, and that a gallbladder that is fairly normal histologically may be disturbed functionally. He also states that, in his experience, it has seemed that we were not justified in basing surgical procedures on the gallbladder entirely on the functional disturbance.

It has been stated that 5 per cent of all cancers occur in the gallbladder; that most of these cases have gallstones, and for that reason, if they have definite evidence of gallstones, the gall-bladder should be removed to prevent the possibility of cancer. If we accept this statement that 5 per cent of all cancers occur in the gallbladder—which seems rather high,—that would be one death in every one hundred thousand, while five to seven deaths in every one hundred would occur from operation to prevent it. This, of course, is only another evidence of enthusiasm for gallbladder surgery.

We are told that gallstones are the [illegible] results of neglected cholecystitis, and that we should never wait until that late stage of the disease before operating. On the other hand, in many cases of gallstone operations, we find the gallbladder normal. It is also true that patients upon whom we have operated for gallstones, on the average, have had a much more satisfactory postoperative history than those upon whom we operated for so-called chronic cholecystitis.

The students of food allergy have now come along and, out of this human heap of surgical failures, have found that a great many of these people continue to have the pain and other symptoms exactly as before the operation, because they are food allergy cases. We hope that from now on we will find this out before the operation instead of finding it out after the operation.

The history of so-called "gallbladder disease" in neurotic women is about as follows:

A great many have had abdominal operations before, often appendix or some pelvic operation, attacks of moderate pain in region of gall-bladder, accompanied by much gas and often soreness—pain doesn't usually require hypodermics and they are not jaundiced; usually they are very nervous, have a lump in the stomach, can't eat various things because they cause gas, and they are frequently nauseated, but at no definite time. They will have much belching after eating, and are usually constipated.

Gas is usually the outstanding symptom. The patients do not have a history of definite acute pain accompanied by extreme soreness and fever, such as they would have in acute cholecystitis. Many of them have found certain articles of diet that increase their misery. They are never sick enough to have to stay in bed or lose any time from their duties.

We find, now, that a good many of these cases have been having hay-fever, asthma, hives, and so forth. Two of our recent cases have passed blood from the bowels during these attacks. X-ray report is usually "atonic gallbladder without stone shadows". Examination of material secured by medical gallbladder drainage is often of importance in the differential diagnosis. These patients are very persistent about having something done, and ultimately secure an operation. Examination at the time of operation is often very disappointing as far as pathology is concerned.

CONCLUSIONS

1. We have a feeling that clinicians in the past few years have built up around the gallbladder an exaggerated pathology that in

reality does not exist. We are aware of the associated pathology in other organs of the body when there is a chronic infectious focus, but we do not believe the associated pathology in so-called chronic "gallbladder disease" warrants early operation. Nor do we believe it explains our failure to relieve the "gall-bladder disease syndrome" after the removal of an apparently innocent gallbladder for the same.

2. Furthermore, experience has led us to believe that there is a certain class of hypersensitive or allergy cases, having the "gallbladder disease syndrome" that cannot be relieved by cholecystectomy. A careful history in these cases often reveals hay-fever, asthma, urticaria and certain forms of the purpuras.

3. In considering the mortality rate from cholecystectomy and the number of cases not relieved by the procedure, whether they are due to allergy or other causes not yet clearly understood, we believe surgeons generally are over anxious in their indications for early removal of the gallbladder for a syndrome as yet vaguely understood.

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FUNGUS INFECTION WITH SPECIAL REFERENCE TO THE LUNGS

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Fungi are even more generously distributed through Nature than are their close kin, —the bacteria,—and they very frequently infect the human tissues, even to the point of acute fatal invasion, as in blastomycetic septicemia. Yet, in spite of these well known facts, mention of fungus infection, aside from certain familiar skin diseases, brings only the idea of strange and unusual clinical pictures. For many years, Castellani[1], Mendelson[2], and others, have been insisting that internal infection by the larger vegetable organisms (higher fungi) is vastly more common than the clinician realizes. For example, Sanford and Voelker[3], in 1925, gathered reports on 670 cases of actinomycosis, more than half of which had not previously been recorded in the literature.

This sketchy presentation is intended to give a brief review of the general classification of fungi, following Castellani, and then a short discussion of the clinical types of pulmonary infection with such organisms. The general classification is mentioned in order to emphasize the biologic relation of the fungi, not only to the higher plants but, of more importance, their close kinship to certain bacterial groups.

VEGETABLE KINGDOM

Spermatophyta,—seed plants
Pteridophya,—ferns.
Bryophyta,—mosses
Thallophyta,
  Algae,—thallophyta with chlorophyl.
  Fungi,—thallophyta without chlorophyl.
    Schizomycetes,—fungi which reproduce by fission.
    Mycetes,—unicellular or pluricellular plants which reproduce by sporulation.
      Myxomycetes,—multinuclear naked protoplasm.
      Eumycetes,—usually filamentous thallus.

Fungi belong to a subdivision of the thallophyta, or plants with a reproductive portion distinct from the vegetative portion. Of the thallophyta, the class of algae have chlorophyl and obtain their oxygen from the air, while the fungi do not have chlorophyl and must, therefore, obtain oxygen from the material in which they grow. There are two classes of fungi: the schizomycetes or bacteria which multiply by fission, and the mycetes which reproduce by sporulation. The subclass of eumycetes, distinguished by having, as a rule, a filamentous thallus, contain all the fungi which are parasitic to man. The eumycetes are divided into four classes, three of which contain the parasitic forms. Before passing to these, it is well that we briefly define a few more or less familiar terms, so they will recur to us readily.

Thal'us refers to the vegetative part of the fungus.

Hypha is an individual filament of the thallus. A hypha is usually a cylindrical tube containing protoplasm; it is usually divided at intervals by partitions called septa; hyphae may be of various shapes, long and thin, short and thick, straight or curved. In the bacilliform fungi, the single rod would be both hypha and thallus. In branched forms, the parent stem is thallus, the branches being hyphae.

Mycelium is a collection of hyphae.

Spores are the specialized cells by which fungi reproduces. **Conidia** are exospores or freeborn spores. **Gonodia** are endospores, either born in a specialized sac called an ascus, or by a more complicated process. **Zygospores** are spores formed by union of two identical cells called gametes. **Oospores** are spores resulting from the union of two sexually differentiated cells.

The four classes of eumycetes are the following, only the first three containing parasitic forms:-

I. Hyphomycetes, or fungi imperfecti. Mycelium, when present, is septate; reproduction is by freeborn spores (conidia).

II. Ascomycetes. Reproduction by spores contained in asci (ascospores).

III. Phycomycetes. Mycelium not septate; reproduction by zygospores.

IV. Basidiomycetes.

The large chart presented herewith gives the different orders, families and genera of the three classes of eumycetes, which contain all fungi parasitic to man. This is an appreviated copy of Castellani's classification. There will be found here many familiar names, such as the fungi causing ringworm, thrush and other familiar external lesions. There are other names which should become familiar to us. It is increasingly evident that fungus infection is not rare and is usually incorrectly diagnosed. The reason for failure to recognize such infections is their close similarity to tuberculosis, syphilis and other granulomata. The confusion is not helped by the favorable response of many mycoses to potassium iodide, thus misleading the clinician into a diagnosis of syphilis, because of a supposedly positive therapeutic test.

Infection by a mycete is known as a mycosis. Bronchomycosis is the general term for infection of the bronchi and lungs by fungi. Bronchomycoses are not nearly so rare as commonly supposed. There are numerous references in the foreign literature to mycoses of the respiratory tract, but American writers are not lacking in recognition of the growing importance of this subject. In addition to the voluminous writings of Castellani, we find in a somewhat cursory reviey of current medical journals many references to bronchomycoses:

Steinfeld[4] found monilia, endomyces and cryptococcus (blastomyces) in mild and chronic asthmatic bronchitis.

Stokes and McCleary[6] report cases of asperigillus infection of the respiratory tract with autopsy findings.

Lapham[7] writes on the association of aspergillosis with tuberculosis and believes that this form of fungus infection is fairly common. She states that the lesions cannot be distinguished from tuberculosis and that double infection is serious.

Foersfer[8] gives a very excellent resume of sporothricosis and states that lung infection does occur. Forbus[9] and Singer[10] report cases of pulmonary sporothricosis.

*Omitted in error; to be printed next month.

Other articles, elsewhere referred to in this paper, are those of Wilhemj[11], Philibert and Cordey[12], Turner[13], Mendelson[2], Hamman[14], Christison and Warwick[15].

Bronchomycoses may be due to a variety of fungi and a formidable nomenclature has grown up, enough to discourage the casual reader. Castellani gives a simplified grouping for clinical purposes, but even that is rather difficult to hold in mind, and there is given below a classification which is easy to remember and which will, we hope, encourage the search for and recognition of these fairly common respiratory infections.

1. Bronchomycoses due to filamentous fungi. (This will include all fungi of the order of microsiphonales, such as actinomyces, cohnistreptothrix, vibriothrix, cladothrix, leptothrix and anaeromyces). Bronchonocardiasis.

2. Bronchomycoses due to the yeastlike fungi. (This will include the hyphomycetes such as blastomyces, torula, monilia, oidium and oospora, as well as the ascomycetes such as saccharomyces, willia, endomyces and coccidiodes). Bronchothallosporosis.

3. Bronchomycoses due to fungi of more complex form. (This will include aspergillus, penicillium, acremoniella, mucor, rhizomucor, lichtheimia, sporotrichum, acladium).

It is admitted at once that this modified classification into three groups does violence to the purely biological grouping. However, our aim is to make a simpler classification of more practical value to the clinician, without too much hair-splitting over distinctions in nomenclature. Pneumonia is pneumonia to the physician, whether produced by type one, two, three or four pneumococcus, and only when treatment is to be guided by the information is it essential to know the type of organism. If we do not wish to remember the term "bronchonocardiasis", we can at least bear in mind that there is a group of fungi, filamentous in structure and closely akin to the tubercle bacillus, producing almost identical clinical pictures; this is manifestly simpler than to attempt to draw fine distinctions between broncho-actinomycosis and broncho-anaeromycosis, and so forth. The term "broncho-thallosporosis" we have not seen used before, but certainly it is simpler to include under this name all infections produced by the thallospores (blastomyces, torula, oospora, monilia, oidium), whose clinical courses are indistinguishable, than to attempt to remember the biologically correct term for each infection. It is admittedly taking more liberty to include under this term the ascomycetes (such as saccharomyces, willia, endomyces and coccidiodes), but so long as the clinical pictures are so nearly

alike, it should be granted to the clinician, who is more inclined to be practical than accurate, to have a comprehensive term for a practical grouping. If the practitioner will go so far as to suspect and eventually to diagnose the presence of a fungus infection, that is all that can reasonably be expected of him, and the finer distinctions can be left to the high powered clinical pathologist or bacteriologist. There is sufficient variation in clinical courses to warrant the separation of the three groups mentioned above.

GROUP 1. BRONCHONOCARDIASIS

Mycoses caused by filamentous fungi of the microsiphonales order. Several fungi belong to this order and it is usually surprising to the clinician to realize the very close kinship between them (the nocardia) and tubercle bacilli. Nocardia is the term now recorgnized for actinomyces and streptothrix, probably the fungi most commonly found in mycotic lung infections. The anaeromyces are intermediate between the mycobacteria (tubercle bacilli) and the nocardia. Being members of the same family, it is not at all surprising that infections of the lungs by these fungi should usually be diagnosed tuberculosis. This close similarity to tuberculosis is the distinguishing characteristic of this group of fungus infections, and this similarity should be anticipated from the biological kinship. When we recall that some of these bacilliform fungi are acid fast to the carbol fuchsin stain we do not wonder that most of the cases are mistakenly diagnosed tuberculosis.

We have had occasion to observe two patients who presented the extremes of involvement in this group. One of these had undoubtedly had the infection more than twenty years, with advanced changes in left lung, pleura and chest wall. There were numerous discharging sinuses and purulent expectoration. Both the pus from the sinuses and the sputum showed granules with nocardia. This patient (ref. Dr. Fred G. Holmes) had been operated upon several times in eastern clinics for what was supposed to be tuberculous lesions in the ribs. After correct diagnosis, treatment with massive doses of iodides and radiation was given, with healing of all the sinuses and almost complete cessation of expectoration. The other case was a mild chronic bronchitis with asthmatic symptoms, the case reported by Turner. Organisms were found in the sputum and cultured, proving to be nocardia. This patient (ref. Dr. George Goodrich) entirely recovered under iodides and radiation, and has remained well.

GROUP 2. BRONCHOTHALLOSPOROSIS

As previously mentioned, to include all the yeast infections of the lungs in the same group, takes liberty with a purely biologic classification, but since the whole yeast-like group cause very similar, if not clinically identical, lesions and symptoms, we hope to win the approval of the practitioners at least, even though the meticulous bacteriologist will scorn such a grouping. The yeast-like fungi are prone to systemic distribution, thus marking off a distinct clinical characteristic from the filamentous fungi which tend to localized lesions. Blastomycosis is the best known of the infections under this head. Wilhemj[4] quotes Stober to the effect that the respiratory tract is the atrium of infection in systemic blastomycosis, although Castellani states that pulmonary invasion is usually secondary to the skin involvement. Wilhemj cites thirty-three cases confirmed by autopsy in which the lungs were involved in thirty and twenty began with pulmonary involvement.

In addition to blastomycosis, the torula, monilia, saccharomyces and coccidiodes usually cause either general systemic disease or multiple widely separated lesions.

We have observed at least three cases in this group. One came to us for roentgen examination for suspected tuberculous spine complicating what was thought to be an advanced pulmonary tuberculosis. Bone lesion was in the crest of ilium and was unlike tuberculosis. Incision of the abscess gave pus containing blastomyces, and further investigation of the lung condition showed this to be blastomycosis also; diagnosis was later confirmed by autopsy. The second case was sent for x-ray examination of what was supposed to be tuberculosis of the elbow, in which we concurred. Amputation was done some weeks later and laboratory examination of tissue showed coccidioidal infection; this patient died from pulmonary involvement which autopsy showed to be of the same type. The third case started as an acute broncho-pneumonia which did not subside, and tuberculosis was suspected. Sputum was consistently loaded with yeastlike organisms, which culture proved to be monilia. Patient finally developed a hip joint infection which seemed to negative the diagnosis as we could find no reference in literature to monilia infection in bone. However, in conversation with Castellani, he stated that he has twice seen joint and bone infection by monilia and that the course of this case would not be inconsistent with moniliasis.

Monilia, endomyces, oidia, willia, saccharomyces all cause lesions clinically in-

distinguishable from those mentioned, although coccidioides are more likely to invade bone and the blastomyces to spread generally through the body.

GROUP 3. COMPLEX FUNGI

Infections by aspergillus, penicillium and the hyphomycete,—acremoniella,—are clinically identical. Lapham concludes from her observations that many cases of asthmatic bronchitis or asthmatic symptoms in tuberculosis are due to aspergillus infection, which can be either primary or secondary to tuberculosis. Infection by mucor, sporotrichum and acladium are much less frequent than those mentioned above, but are occassionally met with. Cutaneous sporothricosis is now known to be fairly common, closely resembling skin tuberculosis or syphilis. Recent writers have described pulmonary lesions.

DIAGNOSIS

The literature on mycoses of the lungs has little to hold the interest of the general practitioner. Writers, instead of endeavoring to clarify the clinical picture, center their attention upon describing some unusual organism, and if it does not conform exactly to an established form, a new name is coined and reported with great gusto. On the other hand, there is nothing distinctive about mycotic infection of the lungs. Hamman[14] very concisely summarizes the situation when he states that mycotic lung disease presents no characteristic clinical picture, but masquerades in the likeness of a number of well-known pulmonary infections. While it may simulate any of the subacute or chronic bronchial or lung diseases, it is most often mistaken for tuberculosis. Actinomycosis (nocardiasis) of the lungs is the most common bronchomycosis, and Christison and Warwick[15] give the chief diagnostic points between it and tuberculosis as follows:

Actinomycosis

Lower lobes first affected.
Lymph nodes never involved.
Pain a common symptom.
Cavity formation rare.
Spreads by continuity.
Sinuses in chest wall frequent.
Abscess formation frequent.
Often spreads through diaphragm.
Fungi in sputum.

Tuberculosis

Apices first affected.
Lymph nodes usually involved.
Pain a rare symptom.
Cavity formation frequent.
Often metastasizes through blood.
No involvement of chest wall.
No abscess formation.
Rarely spreads through diaphragm.
Tubercle bacilli in sputum.

Pulmonary symptoms may vary, regardless of the infecting organism, from those of a chronic bronchitis extending over years, with few physical signs, no characteristic x-ray findings and little interference with general health, to a rapidly advancing, destructive process in the lungs, with purulent or bloody sputum, anemia, emaciation, hectic fever and death. Fungus infection should be suspected whenever the pulmonary disease does not easily fit into any accepted diagnosis, and systematic search should be made for the organisms in the sputum. The ease with which organisms are found will vary somewhat with the kind of infection. Sputum may show small granules containing mycelial filaments in actinomycosis, or thin, bacillary filaments may be found. In case of streptothricosis, these hyphae may be acid-fast and resemble tubercle bacilli. If they are the anaeromyces they will resemble the diphtheroid bacillus, though branching forms will usually be found, gram positive and strictly anaerobic.

The yeastlike fungi are more difficult to find and it is essential, especially with the monilia, to examine the sputum when perfectly fresh. It may be necessary to use cultural methods either to detect the organisms or to prove their type.

Having found a fungus in sputum, this does not establish the diagnosis, since such organisms may be present in one of three capacities (Hamman):-

1. As a saphrophyte in the secretions, having nothing to do with the infection.
2. As a secondary invader upon a tuberculous or other infection, in which event it may profoundly alter the course of events.
3. As the primary and sole infecting agent. Stovall and Greeley[16] report 58 cases where fungi were found in sputum, but in only 18 of these were they able to establish positively that the fungi were the primary infecting agents. The entire resources of clinical judgment and laboratory facilities may be required before a correct conclusion can be reached.

TREATMENT

Having established that infection of the lungs by a fungus is present, what is the treatment? Most cases will be benefited by large doses of potassium iodide; some will not. Several of the types appear to be amenable to radiation by x-ray, and this is the recognized treatment for infection with nocardia. The two measures may be given simultaneously. Philibert and Cordey[10] report a case of lung infection resembling broncho-pneumonia for several months and then in milder form for five years. It finally

proved to be infection by saccharomyces and recovered under treatment with iodides and methylene blue after proving refractory to iodides alone. Steinfeld treated fifteen cases of yeastlike infection by killed autogenous cultures in conjunction with iodides, with good results.

It will immediately become apparent from these few words about treatment, that the treatment of fungus infection is quite different from that of tuberculosis, and that therefore diagnosis becomes of prime importance.

SUMMARY

1. Suspect fungus infection of the lungs when symptoms of tuberculosis exist and tubercle bacilli cannot be found.

2. Hunt carefully, diligently and repeatedly for some type of fungus in **fresh** specimens of sputum.

3. Do not be greatly concerned about the particular type of fungus, except for the satisfaction of scientific accuracy. The classification of the type of infection, aside from the simple grouping mentioned, is of little clinical value.

4. Filamentous fungi will probably mean a localized lesion; if in the lungs, infection will remain in that region, spreading slowly by contiguity.

5. Yeastlike fungi will probably be found scattered throughout the body.

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EXTRAPLEURAL PNEUMOLYSIS
(Preliminary Report of Cases)

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In the treatment of pulmonary tuberculosis, we have had for many years, as recently reiterated by Flinn in the Arizona State Medical Society, a specific: namely, rest, in proper dosage. We have no other specific. All of the other attempts at treatment are based on this principle. The method of Forlanini, with its later aid of intrapleural pneumolysis; the various forms of phrenic nerve interruption; thoracoplasty, are all a logical development of this idea.

It is interesting to note that the idea of localized rest allowed by extrapleural pneumolysis was conceived early in the methods of surgical rest of the lung. Tuffier is frequently credited with advancing this idea forty years ago. However, as early as 1885, Truc[1] performed a partial plastic, "seeking retraction of a cavity that had previously been opened." De Cerenville[2] resected the fifth rib in order to obtain retraction of an underlying cavity. Others performed local plastics for similar purposes. The idea of Tuffier[3] embraced compression of an apical cavity by resection of an overlying rib and separation of the parietal pleura from the thoracic wall, following which a mass of fat was placed in the extrapleural space. The wound was then closed. Since this time, numerous attempts to improve on the method have been made. It has been used chiefly for the compression of apical cavities, and various approaches—anteriorly, posteriorly, and above the clavicle—have been used. The original fat packing of Tuffier has been replaced by a great many substances, including omental tissue, breast in women, fibroid, paraffin, a mixture of vaseline wax, and pedicle grafts of the pectoralis muscles.

Extrapleural packing with iodoform or other gauze or compresses, changed every few days, have been used. Likewise, rubber bags which could be inserted into the extrapleural space, after freeing of the pleura, and then inflated and kept in this state until some fibrosis of the pleural tissues in their new position could be secured. Freeman[4] of Denver reported favorable results by apical compression after extrapleural section of the second and third ribs anteriorly and application of a truss.

There has been gradual loss of confidence in fat and other tissues as a means of securing permanent compression in an extraplural space after pneumolysis. The consistency of fat and other transplanted tissues is not maintained. Even the pedicled muscle grafts undergo some degree of atrophy and contraction associated with scarring, thus allowing

some decrease in size of the filled space and allowing expansion of the compressed cavity. In my opinion, there is a serious objection to extrapleural packing with gauze or rubber bag or any substance which does not remain permanently in the chest, because of the fact that a localized pocket of extrapleural infection can scarcely be avoided, and other procedures are necessary to clear up this infected space. Thearle[5] reported twelve pneumolyses comprising one pectoral-muscle filling and eleven gauze-tampon fillings, from which he concluded, after a year's observation, that they were not completely effective because of partial cavity expansion following scar contraction, as the large extrapleural space slowly filled with granulation tissue.

However, through the years, paraffin has come to be more highly regarded than any other substance for this procedure, particularly among the Germans and Austrians, and now also among the French. I presume the persistence of Sauerbruck in its use is very largely responsible for its present revival. Following Sauerbruck, von Walzel and Neumann, in Vienna, have, in the past three years, used it in 150 cases with favorable results. The paraffin employed is a mixture which can be sterilized and placed while soft in the extrapleural cavity, where it remains in solid state at body temperature or ordinary fever temperatures.

Study of autopsied cases has shown that a high degree of fibrosis in the pleural and intrathoracic tissues occurs adjacent to the mass of paraffin as a result of foreign-body irritation. Frequent mention is made in the older literature of the danger of the paraffin being extruded as a result of this reaction and resulting infection. However, in my experience, this seldom occurs. It is too early to say that it may not happen later, but the only case in which I have had extrusion of paraffin is one in which I am confident that infection of the extrapleural space occurred from the wound. I believe it can be avoided by absolute asepsis both at operation and until accurate skin union of the wound has occurred. A change in this country in favor of the use of paraffin as an extrapleural packing, is occurring.

Indications for this type of operation are definite. Let me first repeat here that a thorough trial of rest should be given in every case. If ineffective, pneumothorax should be tried. If these fail, extrapleural pneumolysis may be considered in the following types of case: (1) Localized cavitation in the upper lobe or apex of one lung, with good lung below and on the other side. (2) A case with upper lobe or apical cavitation, with good lung below, but with involvement in the other lung which is of doubtful prognosis. (3) Cases with bilateral localized apical cavity. (4) Cases which are not, but may eventually become, suitable for thoracoplasty. (5) It is also of value in cases in which posterior thoracoplasty has failed to obliterate large cavities.

In favor of the election of extrapleural pneumolysis as a primary surgical collapsing procedure, I would urge, in addition to the probability of saving good lung tissue, the fact that this operation, which may be done under local or block or gas anesthetic, is of much less shock to the patient than any stage of a thoracoplasty, unless this be section of perhaps three ribs in a patient able to withstand section of five or six at one stage. I would say that the majority of my nine cases have not experienced even first-degree shock.

As regards pneumolysis as a procedure supplementary to thoracoplasty, it again represents less shock than an anterior costectomy. This is contrary to the opinion of Welles[6] published in 1927. He did not state whether he had given much trial to pneumolysis. In the two cases in which I have performed anterior costectomy following posterior thoracoplasty, I feel that better results would have been secured by extrapleural pneumolysis with paraffin filling.

Extrapleural pneumolysis has been carried out through resection of the second or second and third ribs posteriorly near the spine, opening large enough to admit one or two fingers being made. This method was used recently by von Walzel in a large series of cases. The anterior approach above and below the clavicle has been used. Eloesser[7] has recently used the anterior approach, cutting the pectoralis muscle and entering the second interspace without resection of rib. In our series of cases, with one exception, incision has been made just behind the anterior axillary fold, the muscles retracted and section of the second or third rib made. The intercostal muscles and periosteum, at closure, are sewn tightly together. In one case, the second intercostal space was entered without section of a rib, but in the majority of cases, in our experience, the spaces at this point are too narrow to admit of sufficient entry of the finger into the chest to complete the pneumolysis.

Local anesthetics and, in some cases, ethylene-gas anesthetic have been used.

I have, in all, treated nine cases* with this procedure and I will run through them briefly showing, in six of them, film findings before and after operation. Of the other three cases I will show, two bear out an objection to this procedure which is voiced in the literature and which I would uphold to some extent. In these two cases, the cavity wall

was, at one point, as thin as cardboard, and rupture into the cavity was done at operation. In one of these cases, I have since performed effective upper stage thoracoplasty. The other case was a young doctor whose condition was so grave that no other procedure seemed conceivable. The fortunate result in his case has been almost perfect cavity drainage and marked general clinical improvement, such that thoracoplasty can now be performed. Despite the favorable outcome, these two cases show the necessity of careful scrutiny of the x-ray appearance of cavity walls before attempting this procedure. The thickness can often be observed to some degree.

The third case is one in which bleeding from the pleura after freeing was evidently not thoroughly stopped before packing. On the day after operation, a massive subcutaneous ecchymosis of the whole right chest and flank occurred. Fearing infection, I made a small drainage opening in the incision and, in this way, I am sure, caused the infection which I had feared. The ecchymosis cleared naturally, but, during the next three months, the paraffin largely sloughed out. Fortunately this patient evidently formed sufficient fibrosis and fixation of tissues about the collapsed cavity so that his sputum and cough have not as yet, after five months, recurred. Further plastic has, of course, been recommended in this case following his general improvement.

The first of the six cases I will now show is a girl of twenty-seven who had been under bed rest for a year and one-half. Her original examination showed bilateral advanced tuberculosis, with large cavity in the right apex and small cavity in the middle third of the left lung. Since extrapleural pneumolysis, she has had reduction of sputum from two ounces to one or a little less, but her sputum remains positive. We believe the left lung is chiefly responsible for her present cough.

The second case showed, three years before operation, a marked bilateral process which, shortly before operation, had improved very much on the left side, but had totally excavated on the right. The postoperative film shows a shadow which is, in part, we believe, due to extrapleural effusion, which often occurs in these cases. There has been no ill effect from this effusion, which is absorbing.

Third case was considered after a period of bed rest and attempted pneumothorax for thoracoplasty, but a small tuberculous atelectatic area of the opposite lung made us hesitate. After reexpansion of the partially collapsed lung, operation was done. This case also showed some effusion.

The next patient was forty years old. After four years medical observation he persisted in cough and expectoration and occasional exacerbations, despite general improvement. Six weeks after operation, he now shows very scant daily expectoration and general improvement.

The next patient, thirty years old, had been in bed for one year, during which a small cavity in his left lung had very much decreased but a very large cavity remained in the apex of the right lung. He was not considered a good risk for thoracoplasty. His temperature dropped to normal after operation and his sputum, from two ounces or more, to less than one-half ounce, in a month.

The last of the six is a woman twenty-six years old who had been through the mill and who still had cavitation after thoracoplasty. The remnant of her cavities was so close to mediastinum that anterior costectomy would not cure her. Probably the one paraffin filling we performed has not; but she is very markedly improved. Some basal left-sided densities have remained practically stationary since she was first seen in June, 1930.

Figures reported in 1930 by Doumont and Rougy, which they had attempted to collect from Hungarian and Austrian sources, gave the following results in extrapleural pneumolysis with paraffin fillings: 36 per cent results excellent, 28 per cent benefited definitely, 36 per cent ineffective. These were taken about six months after operation. In this present series, we must include two attempted cases where cavity rupture occurred and no paraffin packing was actually used, and these were ineffective for the purpose of this article. With these two exceptions, we consider that all cases have been improved by the procedure, and four have shown marked improvement. As the first case done is only seven months old and the last one month, it is too soon to draw final conclusions. However, at present, we would say the percentage is: ineffective (2 cases ruptured) 22 per cent, markedly improved 44 per cent, less improved 33 per cent,—which is comparable to the above statistics. With better and earlier selection of cases, we feel these results may be improved.

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* Three other cases have been completed since reading of this paper.

CURRENT MEDICAL PROBLEMS OF CENTRAL AMERICA, WITH SPECIAL REFERENCE TO THE TREATMENT OF AMEBIASIS.*

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(Read before the San Francisco County Medical Society on November 3, 1931.)

During the late summer of 1931, we observed at first hand many things of medical interest in the American tropics. We were sent to Panama primarily to study the effect of Carbarsone in amebiasis. While in Central America, however, we were fortunate in being able to visit Guatemala City and San Jose de Costa Rica. In Panama City our work consisted of protozoological studies in the Gorgas Memorial Laboratory and treatment of those patients in the Hospital Santo Tomas who were infected with pathogenic amebae.

The first foreign port we touched was Mazatlan in Mexico, a town of about 30,000. Here one is impressed by a filthy public market place, with meat and other foods exposed to dogs, flies, and meddling fingers. Naked pot-bellied children and bare-footed peons are seen everywhere. We were told by the port medical officer that tuberculosis, malaria, and gastro-enteric disease are the major medical problems. The water supply is contaminated and unfit for human use. Rats are so plentiful that it is necessary to keep a boa constrictor in the best hotel as a "house cat."

Going from Champerico into the interior of Guatemala through swampy lowlands, one sees on all sides bare-footed, poorly nourished natives of small stature. Hookworm and/or ascaris infection are universal, but efforts are being made by Dr. Daniel Molloy, of the Rockefeller Foundation, to carry out mass treatment in the field. Single gram doses of hexylresorcinol are effective in clearing 90 per cent of the hookworm infestations, and in ascariasis about 65 per cent respond favorably. On reaching the coffee belt, at an altitude of 2,000 to 4,000 feet we pass through a region heavily infested with Onchocerca. Except for a small area in Chiapas and Oaxaca in Mexico, this disease is confined to a strip running north and south through the coffee lands of Gautemala. Thus far, efforts of control have been useless, largely due to the habits of the fly vector, Simulium. Eradication of the fly is impossible because the insects breed on the under surface of leaves and foliage along streams in the heavily wooded jungle. No treatment except surgical removal of tumor masses has been developed. The most disabling feature is the blindness produced by the Onchocerca when invasion of the cornea occurs.

In the capital, Guatemala City, of 116,000 people, 5,000 feet above the sea, there is a large American Colony. We were told that from one to three members of every American household were infected with Endameba histolytica. Dysentery is one of their serious problems, certainly. The water supply is not fit for drinking and there is no effort made to control food handlers, or otherwise to help reduce this high amebic incidence.

Continuing down the west coast of Central America, we touch several small ports of minor importance. The cleanest and most progressive of these is Puntarenas in Costa Rica. Throughout this country, one is struck by the high quality of native stock, the industry of the people, and the beauty of the country, in general. The capital, San Jose de Costa Rica, is about 75 miles in from the Pacific, at an altitude of 3,900 feet, with a population of about 56,000. Here we find an 800-bed hospital run by Catholic sisters, and supported by a government tax. Before the advent of emetine therapy, dysentery was the chief cause of death in this city, and liver abscesses were common. Now all cases are given emetine at the onset of symptoms and every village throughout the country has a local health officer equipped with a syringe and emetine. Treatment is continued only as long as acute symptoms persist, however, and there is no attempt made to clear patients entirely of their amebae. Consequently, a high morbidity continues, but tuberculosis has replaced amebiasis as the principle cause of death. Typhoid is endemic and cutaneous leishmaniasis is frequently seen. The South American variety, with involvement of the nasal mucous membranes and destruction of the cartilaginous portions of the nose, is not found here.

Dropping down to Port Limon on the Atlantic side, we had an opportunity to visit a 200-bed hospital of the United Fruit Company. This medical unit of four physicians, four graduate nurses, and two sanitary workers, cares for approximately 12,000 people in the field. In spite of vigorous antimosquito measures, prophylactic quinine and plasmoquin therapy, they have a high incidence of subtertian malaria. At higher altitudes the tertian strain predominates and

*Observations made during the late summer of 1931 while engaged in a field study of the chemotherapy of amebiasis, supported in part by Eli Lilly and Co., Indianapolis, the Panama Mail Steamship Co., San Francisco, and the University of California.

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is the only one of importance in San Jose. Previous to April of this year, the malaria rate was reduced to 40 per 1,000 in the Limon division, but at this time a large section of jungle was cleared for banana planting. This work required introduction of labor from Nicaragua and Panama. An immediate increase in the malaria rate to 232 was noted, with serious outbreaks of blackwater fever, typhoid, and amebic dysentery. When we were there in September, the situation was under control, but there were still five cases of typhoid in the hospital, 70 to 80 per cent of the patients had malaria, and we saw one case of blackwater fever in an Old-World Spaniard.

Recently it has been suggested by Thonnard-Neumann, Moya, and Brewster[1] of Santa Marta, Colombia, that the pigment dystrophies of pinta (carate) are due to a derangement of the vegetative nervous system, giving a bilateral symmetrical distribution of the lesions. But in the group of 75 cases reported, they note positive serology in 90 per cent and clinical evidence of lues in a majority of the patients. Dr. E. I. Salisbury, at Limon, demonstrated two cases to us and apparently feels that the observations of the Colombian workers are correct. This is a radical departure from the current belief that the etiological agent in pinta is a fungus.

Our principal interests, however, were in Panama. In the Canal Zone one is impressed by the successful war waged against tropical disease since the construction days. The last important problem is the ever-present difficulty of malaria control. Since 1906 the malaria rate for employees of the Canal Zone has been reduced from 821 to about 15 cases per 1,000. Today, except for malaria, tropical diseases are no longer of importance in the sanitated areas. Pneumonia, syphilis, and tuberculosis are the three chief causes of death, and malaria, venereal disease, and influenza cause the largest number of admissions to Government hospitals. It is interesting to note that the mortality rate for the Zone in 1928 was lower than that of any large city in the United States for that year.

Included in the controlled areas at the termini of the Canal, are the Panamanian towns of Panama City, with an estimated population of 70,000, and Colon, with about 35,000 people. The American public health service supervises garbage disposal, mosquito and fly control, growing of green vegetables, pasteurization of milk, and the water supply for these cities. Water from Gatun Lake is aerated, treated with alum, sedimented, passed through gravity sand filters, and finally chlorinated. This water is piped to every house in the Zone, in Panama City, and in Colon. No other source of supply is permitted. In spite of this rigid control, it is noteworthy that diarrhea and enteritis rank third in mortality statistics, while tuberculosis and pneumonia place first and second in Panama City and Colon. The death rate for Colon, however, was 13.39 in1927, about the same as San Francisco's for that year, while Panama City's rate was 23.97 in 1928, which is higher than most large cities in the United States.

While these figures for the sanitated areas are very impressive, they do not give one any definite idea of the real situation in the interior of Panama. In the Hospital Santo Tomas, a 1,000-bed Panamanian institution which receives at least half of its cases from the interior, we find about 20 per cent of the patients with malaria. Hookworm, ascaris, and E. histolytica are frequently present also. Dr. E. C. Faust[2] in the summer of 1930 reported a 12 to 18 per cent incidence of E. histolytica in hospital patients. In the Chagres river country, a similar survey showed a 33 per cent amebic infection. Dr. Herbert C. Clark, Director of the Gorgas Memorial Laboratory, revealed a malaria incidence as high as 60 per cent in some of the villages in this river basin, which borders the Canal Zone. About two-thirds of these are subtertian infections. This region has recently come into prominence as work has started on the Madden Dam at Alhajuela, on the Chagres, about 30 miles from Panama City. With prophylactic quinine and screening measures, the malarial rate for employees working on this dam has been reduced to 5 per cent. Control of malaria in this manner is a factor of considerable economic importance in any tropical project of this nature.

Since May of this year, five human cases of Chagas's disease have been found in the vicinity of Aquas Buenas, on this river, about 20 miles from Panama City. Infected Triatoma have been caught in the Chilibre caves in this region and are now the subject of an entomological study carried out by Major Lawrence Dunn of the Gorgas Laboratory. Bats, armadillos, opossums, and squirrels, harbor the Trypanosoma cruzi, and the infection may be given to various laboratory animals, with subsequent spontaneous recovery. Clinically, the disease is of little importance here, as none of the reported cases in Panama presented symptoms or clinical signs.[3]

Along the swampy coastal plains, from 22 to 25 per cent of the natives are infected with malaria. On surveys in the interior,

microfilaria are frequently seen, but clinical manifestations of filariasis are rare. The spirochetes of relapsing fever are found on an average of about one case in every village during routine examination of natives for malaria. Yaws is endemic, especially among the San Blas Indians. We saw five cases in the Hospital Santo Tomas this summer. Children are almost universally infested with hookworm and/or ascaris, and practically every young adult in these countries has a reduced hemoglobin. At Palo Seco, three miles from Panama City, is a leper colony maintained by the United States. About three-fourths of the ninety-five inmates are natives of the country. Chaulmoogra oil and its derivatives are used but only about two lepers are discharged each year. Of the deficiency diseases, beri beri is occasionally encountered but is no problem, probably because the native diet consists largely of unpolished highland rice.

As for our own work in Panama, it is as yet too early to know what we accomplished in our short stay of five weeks. During this time Miss Dorothy Koch examined 1824 stool specimens, using the wet iron hemotoxylin staining technic. In 101 instances amebae were found, and eighty-eight infested patients were given Carbarsone.[4] About half of this number live in Panama City, the remainder came from the interior and from Colon. Diarrhea and dysentery was noted in thirty-one patients, and constipation was present in thirteen. No gastro-enteric symptoms were complained of in forty-four instances. A past history of dysentery was obtained only four times, which gives one an idea of how unreliable histories are in Panamanian mestizos. In the group there were twenty maternity cases. Eight individuals showed extensive liver and kidney damage and were not given the arsenical. Two patients undergoing chiniofon and bismuth therapy were examined and found positive for amebae during the treatment. Eighty Carbarsone-treated adults were given orally 5.0 grams of the drug in 10 days, and six children from 1 to 10 years old received about one-half the adult dose. Two patients left the hospital before completing the course and had but 3.0 grams. Thirty-seven cases were followed during the month of therapy, and in all but one instance where six or more specimens were examined after treatment, the pathogenic amebae were eradicated. Worms were not affected by Carbarsone. Diarrhea or dysentery cleared, when present before treatment, in every patient except one, and in this case there was an associated diagnosis of pellagra. The only untoward effects noted were a slight burning epigastric discomfort in two instances, and a transient faintness in four maternity cases that were treated after delivery. No evidence of arsenic toxicity was noted in any patient.

SUMMARY

Except for the studies of the Gorgas Laboratory on malaria, and human and horse trypanosomiasis, and the work of the Rockefeller group in treating hookworm and ascaris infections and malaria, there is no organized effort to solve Central America's many medical problems. Certainly the relatively high incidence of Onchocerca and amebae in Guatemala, and of malaria, amebiasis, and leishmaniasis in Costa Rica, deserve careful consideration as regards eradication of insect vectors, and prophylaxis and treatment in man. The results of the efforts of Panama Canal sanitary workers during the past twenty-five years is an example of what can be accomplished by competent physicians in the conquest of the tropics. Unfortunately, the sanitated area is confined chiefly to the Zone, particularly the terminal American and Panamanian cities. This leaves the interior of Panama, still heavily riddled with malaria, hookworm, yaws, filariasis, and amebiasis, as a potential source of danger to man.

In eighty-eight cases of amebiasis treated with Carbarsone (carbamino-phenylarsonic acid containing 28.3 per cent arsenic) in average oral doses of 5.0 grams in 10 days, a satisfactory response was noted in the majority of patients followed during the month of therapy (thirty-seven in this group). No symptoms of arsenic toxicity were noted.

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CLIMATIC FACTORS OF SALT RIVER VALLEY AS THERAPEUTIC AIDS

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(Read before the Maricopa County Medical Society, June 22, 1931.)

This is a brief discussion of the age-old subject of the effects of climate on health by one who has had medical experience in several climates. We who have lived here as much as a few years, know that this climate has certain beneficent qualities and factors which tend to restore health and vigor to those who have fight left in them. To place convictions into words, however, at least for me, is not an easy nor a satisfying task. Ideas on climate are founded on experience and casual observations rather than upon experiment and scientific fact.

The outstanding feature of our climate, all will probably agree, is sunshine. For the next several weeks many of us may think we have a bit more of it than we like. This excess of sunshine has its redeeming feature, in that it drives many to take much-needed vacations, who might otherwise not take them. Temporary changes of climate and environment are essential, no matter how ideal a climate may be. It is the summer sunshine which stays through the winter that makes the Salt River Valley and similar parts of Arizona outstanding when their winter climates are compared with those of practically all other parts of the United States.

What are the attributes and effects of sunshine? It dispels gloom both actual and psychical. The person who is ill physically is, ordinarily, ill, or at least affected, mentally. A dull day is depressing to his already depressed mind, and a bright one is cheering. Physicians know that illness is universally worse at night than in the day and worse on gloomy days than on bright ones.

Disease commonly results directly or indirectly from bacteria. Bacteria are disseminated by being deposited, here and there, by those who are diseased, and then being acquired by others before the bacteria are lifeless. Unless bacteria are protected, they are killed by a few minutes' direct sunshine. Spread of disease is more thorough in places with relatively little sunshine than in places with much sunshine, other factors being equal.

Sunshine has ultraviolet light—those rays which supply vitamine D. The children of Arizona are notoriously healthy and free of rickets. They absorb light rays through the skin, winter and summer. Clothes are needed in the summer to prevent their getting too much of the ultraviolet light. Throughout the year, vitamine D, and perhaps other chemical deposits from the sun, may also be gained through the alimentary canal by the foods grown under the influence of strong sunlight.

Our sunshine-grown foods are shipped to various parts of the United States, 'tis true, but they suffer in freshness in spite of modern refrigeration. Artificially ripened fruits and vegetables certainly suffer in taste and probably also in digestibility. The medical profession is realizing more than ever the importance of the character, condition, and preparation of food. Spoiled food has always been recognized as deleterious and often dangerous. We are just beginning to consider the dangers of partially spoiled foods. Therefore, it becomes a matter of first importance to be located in the vicinity where liberal supplies of good foods are grown.

Sunshine is the general source of heat; winter days here usually are comfortably warm. Even those who are enfeebled by illness or age may spend their days out of doors. It is common knowledge that the mere being out of doors is conducive to a return of health. This has been demonstrated in the cold bleak Adirondacks and in numerous other places, even in the absence of ultraviolet light and the cheer of sunshine. There are numerous conditions, such as arthritis, neuritis, and other maladies, in which warmth becomes a most important therapeutic agent.

Due to the universal use of dry-bulb thermometers, our summer temperatures have a reputation for excesses which is unwarranted. When one reads that the Phoenix thermometers recorded 112 or, possibly, occasionally 115 degrees, he naturally compares it with his experiences of perhaps 100 degrees in other places and becomes terror stricken. In the main, fear of the heat is purely a state of mind and drives many away just at the time when they would receive the greatest benefits if they but remained. The continued heat of summer is certainly not so harmful as it is nonotonous. We have practically no heat strokes.

A low humidity, especially in summer months is most fortunate. It is lack of humidity that makes our 110 degrees more comfortable than St. Louis's 85 to 90 degrees. Evaporation from the skin, when the atmosphere has little or no moisture, is rapid and takes heat from the body.

It really is "not the heat but the humidity that counts."

It has been said that irrigation is ruining this climate because of the increased humidity. The weather bureau's statistics show that our average humidity for a year is as low as, or lower than, other favored communities of the southwest.

The average humidity for the year 1929, of several of the cities of Arizona, is shown in the following table taken from the U. S. Weather Bureau reports:

	Ajo	Clemenceau	Flagstaff	Phoenix	Prescott	Tucson	Yuma
7:30 am	41	46	74	50	58	53	55
3 pm	22	31	43	23	35	27	24

It is only fair to call attention to the difference in the time of the recording of the figures. The earlier the record is made in the morning and the later in the evening, the higher the relative humidity percentage. It will be noted from the table that Phoenix has a humidity only slightly higher than that of Ajo and Clemenceau.

Places with dry atmospheres and high daytime dry-bulb temperatures have relatively low night temperatures. The fall begins as soon as the sun gets low in the heavens and usually gradually increases until about time for sunrise. This temperature change affords us cool nights practically the year around. We rarely ever, if sleeping conditions are at all favorable, have nights here when sleeping is uncomfortable. The new-comer needs to learn that, as the sun disappears, a light wrap, even on an occassional summer night, when out-of-doors, is necessary to prevent the rapid chilling of the body.

Persons who have not experienced a summer in our climate usually find it difficult to understand how we exist here in summer, to say nothing of our actually enjoying the summers or, at least, considerable parts of them. I explain it to them by saying that they could come for a stay when our thermometer is running the highest and as soon as they have learned to discard unnecessary clothing and to accommodate themselves in other ways, they would say, "There is nothing so terrible about the hot days: this climate is maligned by the weather bureau reports." Then I tell them, if they would stay for six weeks, they would begin to get tired of the heat, especially when realizing that there is another six-weeks or more of it to follow. It really is not the heat we dislike, but the monotony of it. The prolonged heat, however, has great potential good for many of the sick.

Our relative freedom from winds and storms is a delightful feature. Yet there is ordinarily sufficient breeze to carry away the little smoke of our more densely populated areas. Electric power largely takes the place here of coal-generated steam. Irrigation has practically done away with dust and dust storms, so common in desert areas.

Dr. S. A. Knopf, in an article, published a few days ago in the Journal of the American Medical Association, entitled "Climate in Tuberculosis and the Prevention of Relapses", had the following to say. "The ideal climate for the average patient with pulmonary tuberculosis in the earlier and more hopeful stages of the disease, is the one in which the extremes of temperature are not great, with only rare fogs or none at all, with the purest possible atmosphere, with relatively little humidity, with much sunshine, and with all conditions that permit the patient to live comfortably out doors the greatest number of days out of the year and the greatest number of hours out of the tyenty-four." Again, he says: "When there is a tendency to wet catarrh, the extremely hot and dry climates, provided dust storms are not frequent, are often beneficial."

We have seen many patients with tuberculosis, or other chronic wasting disease, just barely hold their own, or perhaps even slip a little, through the winter months, and then, as summer advanced, make definite gains. The second or third summer, perhaps, brought about an arrest or possibly a cure. The laymen here frequently say one summer is worth two winters for a person with tuberculosis, or other chronic illness.

A feature of this climate which needs to be widely advertised is its proximity to mountain districts where one may find any grade of summer temperature he may wish. The natural scenery of the mountains and of the deserts, permeated by excellent highways, is a constant delight to those who call this valley home; to the visitor, if he is sufficiently convalescent, the scenery is a constant source of thrills and joy; exploring the interesting places is a never-ending and pleasant occupation.

The numerous archeological deposits of prehistoric peoples in and near the valley, are also of exceeding interest, especially to those who have not previously contacted them, as well as to those trained in archeology. Phoenix is fortunate indeed to be the owner and developer of a city of the dead, known as Pueblo Grande, situated six miles from the center of Phoenix, on the banks of the Grand Canal. This large Indian mound

covers nearly three acres. Excavations now made indicate that here was a city with buildings of stone and adobe, which in its hey-day must have stood around 30 feet in height with a one-time population of perhaps thousands. During the past two years, Phoenix has employed a professional archeologist to excavate and to preserve the buildings and findings of Pueblo Grande. It has become already a place of great interest to the visitors.

The citrus groves, date gardens, cantaloup, lettuce, and other vegetable fields are places of intriguing interest, as are also the fields of alfalfa, cotton, and so forth. There are endless other natural diversions and amusements and many more to be developed.

From time immemorial, the sick have been sent from their ordinary places of abode to other climates, usually to less populous areas and to climates where weather conditions are considered to be more favorable than those at home. Since the beginning of the United States, the tendency has ever been to send the weakened individuals west. The day was when the belief was general that, if a sick man could reach the prairies of the middle-west, his chances of getting well were greatly enhanced. Then came the period when Kansas and Colorado were havens of convalescence. Now it is New Mexico and Arizona and similar places which hold first rank as restorers of health. It has ever been outward from centers of population to sparsely settled areas. It would seem that a part of the good the sick have thus obtained, has been in getting away from the masses—probably in getting away from the masses' bacteria. It is the amount of infection one gets which usually is serious. A person may likely successfully combat a small amount of infectious material, whereas he might succumb to a massive infection. Our sunlight probably destroys bacteria so readily that massive infection here is rare. Our desert localities certainly combine separation from the masses and the masses' bacteria with the bacteria-destroying power of the sun, in an admirable way.

Too often, patients are sent here by physicians and told by them that they need no medical attention, that just a few months of our good air will effect cures. This is a terrible blunder; it costs many lives; and nothing could be further from the truth.

Climate is no substitute for medical and nursing care. In this connection, I say from mature judgment that the medical and the nursing profession here are of the highest type and need take no back seat in any company. Because of advantages, I believe we are better experienced in handling certain cases than are physicians in many of the medical centers.

Of all the things which can be done for a patient, climate's advantages amount perhaps to about 10 to 20 per cent. The 10 to 20 per cent accumulates like compound interest and will often be the factor which will insure recovery.

Living costs are important. Where there has been prolonged illness, the family purse may have been nearly or quite exhausted. We should provide living quarters so that those who come can find that which will fit their purses. If we advertise our advantages, a frank statement as to the costs should be given. One who can not be assured of just as good medical and nursing care and comforts as he would have at home, should be told plainly not to come. Costs, however, compare favorably with those of like quality elsewhere.

The diseases which may be favorably influenced by our climate are numerous and listing them would be like compiling a catalogue of chronic diseases. The respiratory tract diseases—tuberculosis, asthma, sinusitis, bronchitis, bronchiectasis, emphysema, and pleurisy—are classic examples of diseases which are benefited by mild climates. Classed along with these should be arthritis, rheumatism, neuritis, nephritis, cardiac disorders, rickets, undernourishment in children, certain nervous troubles, and so forth. The aged find our mild climate particularly enjoyable and beneficial.

It is our duty to humanity to advertise our climatic advantages; but let us do it in a way that will bring only those who will not be done harm. The question of having necessary finances for prolonged stays sshould be stressed.

A CASE OF ACUTE BENIGN LYMPHADENOSIS

(Infectious Mononucleosis, Glandular Fever)

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(Read before the Staff Meeting of the Good Samaritan Hospital, Phoenix, Arizona, December 28, 1931.)

Pfeiffer in 1889 was first to describe this disease, and noted accurately the various clinical signs. Longcope[1], in 1923, reported ten cases in which he accurately described the disease and established it as a clinical entity in this country. Hal Downey and McKinley[2], in 1923, were the first to describe in detail the blood picture and differentiate it from acute leukemia. Since then, a large number of articles, describing principally its hematological and etiological aspects, have

appeared in both the foreign and American literature.

ETIOLOGY

The disease occurs endemically and sporadically. Children are most frequently affected, although, in recent years, a large number of cases in young adults have been reported. The contagiousness of the condition has been repeatedly proved. It seems to occur concomitantly with influenza. It is believed that there are small outbreaks of a mild type which escape medical attention. Outbreaks in schools and orphanages have been reported by Tidy and Morley[3], Lemann[4], and Davis[5]. Schwarz[6] believes that this condition is caused by a lymphotrophic virus. Recently Nyfeldt[7] has isolated a diplobacillus from a case which resembles somewhat the organism of infectious monocytosis of rabbits. Bland[8] has also produced a disease in rabbits by inoculating with blood from two cases. The rabbits showed fever, enlargement of the spleen and liver, with focal necrosis and an increase in mononuclear cells of the blood. In three cases, his results were negative. These findings await further confirmation.

PATHOLOGY

Since the disease is rarely fatal, there is little knowledge of postmortem changes. Longcope[1] found change similar to that seen in Hodgkin's disease, in a biopsied node of one of his cases. Enlargement of the spleen and liver are commonly described clinically. Bilateral enlargement of the cervical lymph nodes, particularly the sub-maxillary and posterior groups, is constant. Rarely, other groups of nodes are involved.

SYMPTOMS

The incubation period is estimated at between five and ten days. The onset is acute, characterized by fever, loss of appetite, and, frequently, vomiting. Constipation is the rule, although in mild cases diarrhea has been reported. The temperature is subject to daily variations, with remissions in the morning and with an evening rise. The lymph nodes in the neck usually enlarge early in the disease. Cases are on record in which the enlargement occurs late in the course of the disease. In the vast majority of cases, the submaxillary nodes are involved. Frequently, one side is first involved and later the other side; still later the posterior cervical nodes enlarge. The nodes are hard and tender. Stiffness of the neck may result from involvement of the posterior cervical group about the sternomastoid muscle. Rarely, the axillary and cervical glands may show enlargement, and a frequent complaint is pain in the mid-abdomen. Dysphagia and croup may result from involvement of the mediastinal lymph nodes. The temperature may fall by lysis on the third to the seventh day, but, not infrequently, may last from two to three weeks. This may be accompanied by profuse sweating. During the disease, a slight redness of the throat may be noted, although this is not a constant finding. The leukocytic count increases slowly, with an absolute increase in lymphocytes and a decrease in the granulocytes. The blood picture will be described presently.

The prognosis is good except in cases complicated by acute nephritis or otitis media.

DIAGNOSIS

In typical cases, the diagnosis can be made with a fair degree of certainty by clinical examination alone. In the very acute cases, the question of differentiation from acute leukemia rests upon hematological findings. In infectious mononucleosis, hemorrhages, anemia, angina, which are fairly common in acute leukemia, are usually absent. Other conditions which must be considered in the differential diagnosis are mumps, calculi in the salivary ducts, and Mikulicz's disease.

CASE REPORT

The clinical and hematological aspects of a case which came under our observation recently are briefly as follows:

Present illness: A white boy, age 10.5, became ill November 2nd, two and one-half weeks ago, while playing football. He had no appetite and looked feverish; the temperature was 102° F. He had no pains or aches. A dose of castor oil was prescribed, to be repeated daily. The temperature fluctuated daily between 97° and 104°, highest in the afternoon with remissions in the morning. Chills occurred with the high peaks of temperature. No glandular enlargement was noted until November 16th, when an enlarged subangular node was discovered on the right side. Two days later a similar enlargement appeared on the opposite side, and, subsequently, the posterior cervical and axillary nodes also enlarged. The spleen was palpable on November 19th. At this time, he complained of a mild sore throat and of a sense of abdominal fullness, but no pain. His bowels moved regularly, with daily doses of castor oil.

Past History: Tonsillectomy five years ago. Not subject to head colds. No discharging nose. No ear aches. Measles and mumps, but no other acute infections. A normal nine months' baby. Has had fever and general malaise with eruption of teeth. Respiratory: No chronic cough, no night sweats. No hemoptysis. Has been gaining weight normally. Cardiovascular: No shortness of breath, no precordial pain, no palpitations of the heart, no swelling of ankles. No acute rheumatic fever. Gastrointestinal: No epigastric nor abdominal pain. No nausea nor vomiting. No tendency to diarrhea or constipation. Genito-urinary: No nocturia. No frequency nor urgency. Has not been a bed wetter.

Family History: Father and mother living and well. One brother living and well, one sister died of meningitis. No exposure to tuberculosis.

Physical Examination: Pulse 84, respiration 20, temperature 101, blood pressure 110/76. Fairly well nourished, rather pale-appearing boy. His skin and mucous membranes have good coloring. There

is no definite apparent pain. Child does not have any specific complaints except feeling tired and weak. There are not petechial spots. Pupils react actively to light and accommodation. No ocular abnormalities. Ear drums are normal. There is slight congestion of nasal mucous membranes. There is no apparent obstruction, only a slight glairy discharge. Teeth in good condition. Tongue slightly coated and moist. Pharynx slightly congested. Tonsils gone. There are no white spots in the throat. There is a large, slightly tender, rather firm and elastic, elongated mass, taken to be a lymph node, at the right angle of the jaw. extending downward and inward. Below this node, there is another smaller node which seems to be somewhat adherent to it. A few shotty nodes are felt in the lower anerior cervical chain on the same side. In the same relative position at the left angle of the jaw, there is an enlarged tender node, smaller than the one on the right, also another node below and inside of this one. The left anterior chain is also enlarged but less markedly than the one on the right side. Some shotty lymph nodes are felt in both axillae, rather small, about the size of peas. Other superficial lymph nodes not enlarged. Thyroid not enlarged. No tremors. Chest well developed, expansion good and symmetrical. Lungs clear and resonant throughout. Heart not enlarged, action regular and slow, sounds of good quality, no murmurs. Abdomen soft, liver not felt, the spleen is felt 2 cm. below left costal margin, edge rounded, rather soft. No tenderness. No other masses. Extremities normal. No edema. Knee jerk active and equal.

Laboratory findings: November 7, urinalysis: Very faint trace albumin, specific gravity 1020, acid, no sugar; microscopic, 2 to 5 white blood cells, occasional epithelial cells, no casts nor red blood cells. Blood culture in nutrient broth and blood sugar plates, negative. Agglutination test for Malta fever negative. Blood count: see chart I. November 12: Blood culture repeated with no growth. Agglutination tests using B. melitensis and typhoid bacilli, negative. Stool examination: Semisolid, no occult blood, no parasites or parasitic ova. November 20, urinalysis: Specific gravity 1020, albumin trace, sugar negative, few epithelial cells, occasional white blood cells, no casts. November 30, urinalysis: Specific gravity 1034, albumin negative, sugar negative, occasional white blood cells, calcium oxalate crystals, occasional epithelial cells, small amount amorphous urates. Examination of blood smear—Wright stain. The lymphocytes are mostly of the meso and macro type. The nuclei show at times, definite lobulation. There is no evidence of immaturity of the nuclei in slide obtained November 17, where a slight reversion to immaturity is noted in the nuclear pattern of some of the lymphocytes. On the whole, the nuclei are pachychromatic. A slight cloudiness and lack of clear definition of the chromatin strands are noted in preparations collected on the 17th and 19th. The cytoplasm is abundant. There is a concentration of basophilic substance at the periphery of the cells and a large amount of faint yellowish-blue cytoplasm. The azurophilic substance is increased in amount. In many lymphocytes there is a striking foamy appearance of the cytoplasm.

Course: At no time was the boy very uncomfortable. He was rather listless and lacking in appetite, but, except for the mild sore throat, felt surprisingly well. The temperature remained irregular for 21 days, some days not rising above 100°, on others spiking to 102°, 103°, or even 104°. It came down gradually by lysis. The lymph nodes remained after the recovery, but decreased in size slowly. There were no complications.

COMMENT

This case is typical in both its clinical course and in the hematological picture. The condition of the lymphocytes is identical with that described for this disease by Downey. It is readily differentiated from the leukemias and other conditions in which there is a relative or absolute increase in numbers of lymphocytes, by the characteristic changes in the cytoplasm and nuclei of the lymphocytes.

In view of the clinical course and blood picture, it is almost certain that we are dealing with an acute infectious disease of a specific nature, which stimulates the lymphocytes to proliferation and produces degenerative and alternative changes in them. If the work of Nyfeldt and Bland is confirmed, we shall have advanced another step in the knowledge of acute specific infectious disease and light may be thrown on prevention and treatment of this interesting disease.

This patient is a characteristic case of acute infectious mononucleosis from every standpoint. Clinically, there are distinct features which should make one think of the condition even before obtaining a blood count. The child ran a very irregular fever, with chills at the high peaks of temperature. He had a mildly sore throat but otherwise felt perfectly well, and there was irregular enlargement of the cervical glands. Different groups of superficial lymph nodes may be affected, but commonly there is enlargement of one of the nodes at the angle of the jaw, with later progressive enlargement of other nodes. The spleen is often palpable and there may be abdominal discomfort. Occasionally, the symptoms are more striking. There may be cutaneous and mucous membrane hemorrhages, with severe sore throat, suggesting acute leukemia. Unlike the latter condition, however, there is usually only a mild secondary anemia and the course is relatively benign. Although albuminuria is common during the febrile stage, a severe nephritis only rarely occurs. The fever usual-

Date	WBC.	RBC.	NEUTROPHILS				LYMPHOCYTES			MONOCYTES	
			Segm.	Stab.	Eos.	Baso.	Micro.	Meso.	Marco.	Total.	
Nov. 4.	5600	5100000	38.5%	5%	1.5%	0	20%	28%	4%	52%	3%
Nov. 17	12300	4700000	14.0	2.5	0.5	0	11	47	24	82	1
Nov. 19	14000		11.0	4.0	0.0	0	26	42	18	86	1
Nov. 30	7650	4550000	12.0	2.0	2.0	0.5	32.5	45	6	83.5	0.5
Dec. 23	7700	5100000	47.0	2.0	11.0	1.0	31.5	6	1.5	39.0	1.5

Blood counts made during the disease and shortly after recovery.

ly lasts two to three weeks, occasionally longer.

From a diagnostic standpoint, many conditions must be differentiated early in the disease, such as sinusitis, sepsis, Malta fever, typhoid fever, tuberculosis, pyelitis, and so forth. This is made more difficult in view of the fact that the characteristic blood picture may not occur in the first week or two. Once the mononuclear leukocytosis is well established, however, there is only one disease that is important to differentiate clinically in this stage. The condition may closely resemble acute leukemia, and it is often on the pathologist that we may have to depend to make the correct diagnosis. The difference between the leukemic cell and those of lymphadenosis is apparently quite striking, but, without this microscopic differentiation, we might be quite concerned if a child had acute angina, hemorrhages, high fever, and lymphocytosis. In acute infectious mononucleosis, the count rarely exceeds 20,000, but this may be the case in acute leukemia. It is interesting that in glandular fever the mononucleosis may persist for weeks or months, with a very gradual return of the cells to normal.

Many mild cases of this disease are, no doubt, often overlooked or wrongly diagnosed as some other condition. When there is an exudate present on the tonsils, it may be considered a protracted case of tonsillitis. It is not an uncommon disease in children and has also been frequently reported in young adults. It was first described by Pfeiffer in 1889. In this country, the condition was not generally recognized until 1923, when Longcope revived interest in the subject by describing ten cases. Since then there have been numerous case reports. There have been several hospital epidemics reported among infants, and I have seen three members of a family affected. This would lead one to infer that it is quite highly infectious. Nothing definite is known as yet about the etiology. The gram-positive diplobacillus described by Nyfeldt in 1929 has not been generally accepted as the cause of the disease.

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THE SURGICAL TREATMENT OF PEPTIC ULCER

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Generally speaking, the term peptic ulcer is applied to ulcer occurring in the duodenum, stomach, or jejunum, and strictly speaking it is a misnomer, for in no wise are these ulcers similar. They differ materially in their response to treatment. The surgical procedure of choice for ulcer depends largely on whether the lesion is duodenal, gastric, marginal or jejunal.

The results following surgical treatment of duodenal and gastric ulcers are best when care is exercised in the selection of cases, and when the indications for surgery are most definite. Repeated hemorrhage, perforation, obstruction, or gastric retention resulting from duodenal ulcer, represent more or less urgent indications for surgical treatment. Disability and inefficacy of medical management comprise indications for surgery which cannot be disregarded. Many cases of duodenal ulcer of short duration will respond to medical treatment. Many others, where symptoms are sufficiently mild to produce little if any disability on medical and dietary management, are not surgical. There are definite specific indications for medical treatment. However, to conduct and prolong ineffectual medical treatment in cases possessing definite and unmistakable surgical indications, not only postpones the benefits to be derived from surgical intervention, but often allows the patients to become a poor surgical risk. In general, it may be stated that approximately 50 per cent of duodenal ulcers become surgical.

Surgeons are very prone, and properly so, to regard most gastric ulcers as surgical in the absence of contraindications to operation. Unquestionably many gastric ulcers will heal under proper medical management, but the relationship between gastric ulcer and carcinoma of the stomach cannot be denied. Whether or not there is any degree of agreement between surgeons, internists and pathologists, regarding the incidence of carcinoma developing upon an old gastric ulcer, it must be recognized that the clinical dif-

ferential diagnosis between benign gastric ulcer and early carcinoma is not always easy and accurate. There are many lesions of the stomach, as determined by clinical and roentgen-ray examination, where only exploration and microscopic section will determine the accurate diagnosis. The therapeutic test of differentiation has at times allowed an operable lesion to become inoperable during the period of observation. I repeat that, even though some gastric ulcers respond to medical management, most gastric ulcers, by virtue of their actual and potential pathology, in the absence of contraindications, are surgical lesions. Likewise, it has not been my good fortune to observe permanent benefit from medical and dietary management of marginal and jejunal ulcers when they occur. Their persistence under medical management has frequently resulted in hemorrhage, perforation, and gastro-jejunal-colic fistula.

The most satisfactory results incident to the surgical treatment of duodenal ulcer are those following posterior gastro-enterostomy for varying degrees of pyloric obstruction. These excellent results led to the deduction that if gastro-enterostomy produced satisfactory results when obstruction occurred secondary to duodenal ulcer, the same procedure should produce similar results when used in non-obstructive types of duodenal ulcer. Experience has proved such conclusions not well founded.

Although the technical procedure of gastro-enterostomy has been standardized, its indications have not always been adhered to. The operation of gastro-enterostomy provides excellent results in 88 to 90 per cent of cases when technically and accurately performed in the presence of true indications for surgical treatment of duodenal ulcer. The procedure fails to provide satisfactory results in cases unsuited to such procedure. It fails because it is at times still performed on the suspicion instead of the demonstration of an ulcer. It fails through the persistence of foci of infection or other probable causes of ulcer, or because of individual susceptibility in a small percentage of cases to recurrence of ulcer; through faulty technic, particularly undue trauma, which certainly must be a factor in the causation of marginal or jejunal ulcer; and also fails through early postoperative indiscretions. The unsatisfactory results that occasionally occurred following gastro-enterostomy led to the development of the direct operations, which, for the most part, have a limited field of usefulness.

The direct operation of excision of duodenal ulcer should provide a high percentage of good results, and is a procedure particularly applicable to the bleeding type of duodenal ulcer. Unfortunately, in many cases in which hemorrhage has been a predominating symptom, there is so much inflammatory reaction about the ulcer in the acute and subacute lesions, or so much scarring in many of the chronic lesions, that the indirect operation of gastro-enterostomy becomes the procedure of necessity. Also, the direct operation is not always applicable to the lesions on the posterior wall of the duodenum. The indirect operation of gastro-enterostomy has been successful in controlling the symptom of bleeding in about 50 per cent of the cases of bleeding duodenal ulcers. The direct operation partial duodenectomy described by Judd has, when applicable, afforded greater assurance against recurrence of bleeding than any other type of surgical procedure.

Experience in recent years has shown that the results of simple excision of duodenal ulcer have not been as satisfactory as those in which some type of pyloroplasty has been done in addition to local excision of the ulcer. The Heineke-Mickuliecz, the Horsley, and Finney operations have had to do with the division of the pylorus, with varying results. Horsley recently reported but 45 per cent satisfactory results following his operation, failure having been due in most of the remaining cases to recurring ulcer along the pyloroplasty incision. Judd has not only divided the pyloric sphincter, but has excised the greater part of the sphincter, making a gastroduodenostomy, converting the stomach and duodenum into one continuous tract, thereby producing about the same physiologic changes that occur in cases in which gastro-enterostomy is performed. This operation has been done with a mortality rate of less than one-half of one per cent, and has provided results comparable to the best results following gastro-enterostomy in carefully selected cases. There are, however, certain limitations to the direct operation of excision and partial duodenectomy.

The indirect operation of gastro-enterostomy has given better results when used in cases of old chronic duodenal ulcer, with or without obstruction, than when employed in those cases of relatively short duration, and particularly in young people. It has a higher percentage of applicability than any of the direct operations; and few, if any, of the direct operations, even though applied in carefully selected cases, have been productive of the results derived from gastro-enterostomy. Even though gastrojejunal or jejunal ulcer does occur following gastro-enterostomy, and has been credited with failure to obtain a satisfactory result following gastro-enterostomy in 3 to 30 per cent of the cases, a low incidence is the rule, and quite probably

the true incidence is within 5 per cent. Failure to remove associated disease in the appendix and gallbladder, and the persistence of associated organic disease outside of the stomach and duodenum, are unquestionably responsible in no small measure for incomplete relief following the conservative operations for duodenal and gastric ulcer. The radical operation of partial gastrectomy has little if any place as a primary procedure in the surgical treatment of duodenal ulcer. The direct and indirect operations are performed with a mortality rate approximating 2 per cent. In the last 635 cases of duodenal ulcer operated upon on my surgical service at the Mayo Clinic, there were fifteen deaths, a mortality rate of 2.3 per cent. The average mortality rate of partial gastrectomy is certainly no less than 10 per cent, and recently Hartwell and Felter have reported a mortality rate as high as 36 per cent for this procedure in duodenal ulcer. Primary partial gastrectomy for duodenal ulcer affords little more if any assurance against recurrence of ulcer than do the conservative precedures and no one has yet, to my knowledge, reported results following this radical procedure which surpass those obtained through conservative procedures. Partial gastrectomy is at times necessary as a secondary operation for persistence of bleeding after gastro-enterostomy and, in the absence of a marginal ulcer, such partial gastrectomy may be done with excellent prospects of cure and a minimum risk by preserving the gastro-enterostomy and completing the procedure as a Billroth No. II. The results are so excellent and the risk so small following gastro-enterostomy or the direct operation of excision, with resection of the pyloric sphincter, in the surgical treatment of duodenal ulcer, that the radical operation of partial gastrectomy should be reserved as a secondary procedure, when necessary, for persistent bleeding or recurrence of ulcer.

The problems associated with the surgical treatment of gastric ulcer are considerably more complex than those in duodenal ulcer. The benignancy of duodenal ulcer is practically absolute, and rarely is primary malignancy of the duodenum encountered. Whether or not any relationship exists between gastric ulcer and malignancy developing upon an old gastric ulcer, is a question of great importance and one regarding which there is still considerable controversy. It is quite probable that most gastric carcinomas are malignant lesions from their inception. However, there is much evidence in support of the opinion that gastric ulcer has been the forerunner and has provided the cellular changes which subsequently constitute a true malignant lesion in some cases. The chief problem relates to the differential diagnosis between gastric ulcer and early operable carcinoma, which frequently may be accurately established only through surgical exploration and microscopic section.

To establish the accuracy of diagnosis by such methods necessitates excision of the lesion, which may be accomplished by relatively conservative or radical procedures. For true gastric ulcer, the conservative procedures are usually the ones of choice, reserving the radical procedure of partial gastrectomy for those lesions not suitable for conservative surgery. While the direct operation of excision is highly desirable, the acuteness of the lesion, extensive inflammatory reaction associated with protective perforation or inaccessibility of the ulcer through its high situation in the posterior wall of the stomach, may make only a gastro-enterostomy applicable. In a series of 123 cases of gastric ulcer I performed a simple gastro-enterostomy in 22 per cent of the cases. Balfour has recently reported a mortality rate of 3 per cent and 70 per cent satisfactory results in 100 cases of gastric ulcer in which gastro-enterostomy only had been done.

The incidence of obstruction is high in gastric ulcer situated near the pylorus. However, gastric retention of high degree is frequently noted when the ulcer is situated well away from the pylorus, and in most instances is not due to mechanical obstruction but to disturbance of gastric motility through loss of continuity of gastric musculature. In very few cases of surgical gastric ulcer may a good result be expected following simple excision of the lesion, unless it is for ulcer in the cardiac third of the stomach. Some degree of retention, with delayed emptying of the stomach, may persist after simple excision through continued disturbance of gastric motility, and to obtain the best results from conservative excision, the indirect operation of gastro-enterostomy must supplement it. Cautery excision of the entire lesion has proved a most satisfactory procedure when combined with gastro-enterostomy. It is accomplished with a low mortality rate and followed by excellent results.

Conservative excision of the lesion, with gastro-enterostomy in all but four cases, was the method employed in 77 per cent of the direct operations in my series of gastric ulcer. Some type of resection was used in the remainder, with the exception of four cases in which there had been acute perforation. Partial gastrectomy, after the method of Polya, was most frequently employed. The Billroth No. II was the final procedure in two cases in which a resection was done as the second

stage of a two-stage operation, a posterior gastro-enterostomy having been previously made. There are certain cases in which the two-stage operation is to be recommended, particularly in patients in poor general condition, and in cases in which the one-stage excision of a large perforating lesion would be accompanied by an unjustifiable risk. The Billroth No. I and the sleeve resection have a very limited field of usefulness. The latter procedure is particularly suited to the hour-glass deformity occasionally encountered in gastric ulcer. However, recurrence as an anastomotic ulcer in the suture line, with recurrent hour-glass deformity, is not infrequent. Just recently, I have performed a partial gastrectomy for such a recurrence.

The choice of surgical procedure depends largely upon the size and location of the lesion and upon whether or not perforation has occurred. To disturb the protection afforded by the liver, pancreas, or gastrohepatic omentum in the presence of a large subacute perforating ulcer with much surrounding inflammatory reaction, contributes greatly to the risk of any direct operation. On the other hand, many small or medium-sized ulcers that have gone on to perforation, with subsidence of the subacute inflammatory process, and have assumed the characteristics of a chronic perforated lesion, may be readily excised. Partial gastrectomy may be the procedure best suited to certain gastric ulcers, but the conservative procedure of cautery excision of the lesion and posterior gastro-enterostomy is applicable in a high percentage of cases. It assures approximately as good a result as a partial gastrectomy and it is accomplished with less risk.

The postoperative development of marginal or gastrojejunal or jejunal ulcer has mitigated considerably in the past in condemning the conservative procedures in the surgical treatment of gastric and duodenal ulcers where gastro-enterostomy has been employed as an indirect operation for duodenal ulcer, and when used in conjunction with excision of gastric ulcer. The high incidence of marginal or jejunal ulcer following gastro-enterostomy, as reported by the advocates of radical partial gastrectomy, provides insufficient grounds upon which these conservative procedures may be discarded in favor of the more radical and certainly more hazardous procedure of partial gastrectomy for these benign lesions of the stomach and duodenum. While the incidence of marginal and jejunal ulcer has been reported as from 3 to 30 per cent, the true incidence is probably not more than 5 per cent, and, while such lesions are responsible for failure of gastro-enterostomy, the same complication accounts for failure following partial gastrectomy in a definite percentage of cases, which fact cannot be disregarded. When marginal or jejunal ulcer does develop subsequent to gastro-enterostomy, one may retrace his steps and restore the continuity of the gastro-intestinal tract as a secondary procedure, or resort to partial gastrectomy when necessary. Secondary operations for marginal or jejunal ulcers developing subsequent to partial gastrectomy are of necessity hazardous and radical.

In recent years, there has been a tendency to employ the radical operation of partial gastrectomy for gastrojejunal or marginal ulcer. However, even though partial gastrectomy becomes the procedure of necessity in certain instances, the relatively high incidence of recurrence of ulcer following such radical procedure has served to curb enthusiasm for partial gastrectomy and has instituted a reversion to the more conservative procedures formerly used most satisfactorily. Of these procedures, taking down the gastro-enterostomy and excising the marginal ulcer, with restoration of the continuity of the gastro-intestinal tract and some type of pyloroplasty, has been the procedure of choice, and is again being properly returned to that position. Its usefulness is limited to those cases in which the duodenum and pylorus can be mobilized, and to those cases in which, as a result of the original duodenal ulcer, there is not sufficient scarring and contraction to preclude some type of pyloroplasty. Partial duodenectomy and gastroduodenostomy, after the method described by Judd, has proved a most satisfactory type of operation to employ in conjunction with excision of the marginal ulcer and taking down of the gastro-enterostomy when the duodenum can be mobilized. In those cases in which the duodenum and pylorus are not readily accessible, some type of gastric resection usually must be resorted to. When gastrojejunal-colic fistula, fortunately of infrequent occurrence, has complicated a marginal or jejunal ulcer, the general condition of the patient is such that radical operations are not well tolerated, and here again the most simple surgical procedures are necessary to conservation of life.

I should like to leave with you the idea that the treatment of peptic ulcer requires differentiation as to whether the lesion is duodenal, gastric, marginal or jejunal. Uncomplicated duodenal ulcer often responds to medical management. Failure of response to such treatment, repeated hemorrhage, pyloric obstruction, or perforation, represent true indications for the institution of surgical procedures, among which the operation of partial

gastrectomy has no place as a primary operation. Most gastric ulcers, by virtue of their actual and potential pathology, in the absence ofcontraindications to operation, are surgical lesions, and, while partial gastrectomy is at times the most readily applicable procedure, conservative surgical excision and the indirect operation of gastro-enterostomy is readily done in the majority of instances. The indications for surgical treatment of peptic ulcer must always be sufficiently definite to justify the risk and the mortality rate attending any surgical procedure. The consciousness that surgical mortality follows a wilfull procedure of the surgeon's own hand must deter him from the performance of radical, dangerous, partial gastrectomy as a primary operation in the surgical treatment of duodenal and most gastric ulcers.

ANALYTICAL WORK ESSENTIAL TO RATIONAL SEWAGE DISPOSAL PLANT DESIGN AND OPERATION

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(Read before the Annual meeting of the New Mexico Public Health Association, at Santa Fe, May 11-13, 1931.)

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At first thought, it would seem that the title of this paper is merely the statement of a self-evident fact. It is recognized that the process of sewage disposal involves physical, chemical and biological reactions, and therefore it is reasonable to assume that control is as essential to the success of sewage disposal as it is to that of other processes which utilize these reactions. Furthermore, analysis of conditions has always been one of the duties of the engineer in all branches of his profession.

The need of definite knowledge of the strength and character of the particular sewage which we must treat in a given plant, is, indeed, essential and if any further evidence is needed to prove the truth of this statement we have it in the hundreds of sewage disposal plants scattered over the country. It is safe to say that 90 per cent of the sewage disposal plants in cities of 20,000 and under, are not giving results that justify the expenditure of public funds which they represent. This does not mean that the money spent for sewage disposal has been wasted or that the plants cannot be made to give satisfactory results, but it simply means that the degree of purification now accomplished is a great deal less than that which can reasonably be expected.

These failures, or partial failures, may be explained in a number of ways, but the fact remains that, in the eye of the public, sewage disposal now stands in a more or less discredited position and it is the public to which we must look for the funds for needed improvement. This feeling on the part of the public is in itself enough to challenge the attention of health officers, city officials, and sanitary engineers, since these men realize that adequate sewage disposal is essential to the health of the community.

It is, therefore, well worth while to make a diagnosis of the sewage disposal situation. The designing engineer and the plant operator of today cannot reasonably complain of lack of published data in the art, since this is available in the form of text-books, municipal and state reports, and in the technical press. Information in regard to treatment experience and methods has been given wide distribution through the maintenance of state conferences, and short courses, and through the work of state health departments, engineers and others who work in contact with plant operators.

It is reasonable to ask, therefore, why, when all of this accumulated data is available, do we still have failures. In some instances the answer lies in improper plant design or inferior plant construction, but in the great majority of cases the failure may be laid at the door of stereotyped plant design and stereotyped plant operation. By this is meant the general application of unit sizes or capacities which have been developed by studies at some given point. In the majority of cases, we shall find on careful study that the plants have been designed on sound general principles and are often being operated in accordance with generally accepted rules, but we shall also find that little or no study of the local requirements has been made. In other words, the situation has developed into something like a mail-order business, and success under these conditions is not to be expected, since we know that not all sewages are alike.

If we go back a few years into the history of sewage disposal, we find a similar tendency on the part of American engineers to follow precedent without much regard to local problems. Early in the game, septic tanks and chemical precipitation plants were installed under designs based largely on early English research work, but generally without particular regard to the requirements of the sewage to be treated. Somewhat later, fol-

lowing the studies on sand filters at Lawrence, Mass., we added these filters to the septic tanks, but still ignored the fact that not all sewages are alike. The sprinkling filter followed the sand filter closely in this country and has been applied in many cases with about the same degree of abandon. Early in the twentieth century, the Imhoff tank was introduced into the United States and almost immediately superseded the septic tank, over which it is a marked improvement; but the early installations cannot be called successful, since, previous to about 1915, the proper tank proportions required by American sewage had not become generally known and we were following German practice rather blindly.

The Imhoff tank of today is justly popular, but there are many recent installations the results of which indicate that no particular study of the sewage to be treated has been made. Today, separate sludge digestion tanks share popularity with Imhoff tanks where preliminary treatment is concerned and the activated sludge process, as well as the sprinkling filter method, is considered where more complete treatment is required.

Experience in the design and operation of modern plants emphasizes more than ever the necessity of definite information in regard to the quantity and character of the local sewage, and, in addition to this, the public is now demanding that the sewage disposal process be not only more complete, but that it be accomplished in an inoffensive manner.

In order to illustrate the wide variation in sewage flow and sewage strength in various places, the following table is given here:

City	Sewage flow, gallons per cap. per day	5-day B.O.D. p.p.m.	Lbs. B.O.D per cap. per day	Suspended matter p.p.m.	Suspended Matter pounds per cap. per day	Industries	Kind of System
(1) Alliance, Ohio	131	92	0.101	152	.167	None	San.
(1) Canton, Ohio	64	213	0.114	261	.140	Iron and steel	"
(1) Atlanta, Ga. (Peachtree	160	52	0.070	226	.304	Negligible	Combined
(1) " " (Intrench)	167	63	0.088	106	.148	"	"
(1) Columbus, Ohio	94	190	0.149	206	.162	Starch, dye, tanning, iron, breweries, creameries	"
(1) Fitchburg, Mass	88	155	0.115	297	.220	Paper mills, wool scouring	"
(1) Lexington, Ky	89	144	0.107	166	.123	Negligible	San.
(1) Rochester, N. Y. (Brighton)	128	67	0.072	101	.109	"	"
(1) " " (Irondequoit)	137	104	0.119	188	.215	"	Combined
(1) Reading, Pa	101	118	0.100	145	.123	Dye, Pickling, tanning and grease	San.
(1) Houston, Tex. (N. side)	75	115	0.072	200	.125	Negligible	"
(1) " " (S. side)	75	112	0.070	226	.141	"	"
(1) San Marcos, Tex.	80	67	0.045	110	.074	None	"
(1) Sherman, Tex.	44	202	0.074	264	.097	"	"
(1) Baltimore, Md	106	120	0.106	159	.140	Slaughter houses, dye, drug, soap, breweries	"
(2) Brooklyn, N. Y	102	223	0.189	not given		Industries	"
(2) Chicago, 39th St. Sta	206	106	0.182	"		"	"
(2) " (Des Plaines)	100	122	0.102	"		Negligible	"
(2) " (Calumet)	280	64	0.149	"		Industries	"
(3) Parsons, Kansas	50	338	0.141	319	.133	Creameries	"
(4) Wichita, Ks. (E. side)	49	170	0.069	330	.093	Domestic	"
(4) " " (Central)	155	257	0.332	470	.608	Packing plants	"
(4) " " (W. side)	188	168	0.263	320	.501	Industries	"
(4) " " (Average)	135	223	0.260	420	.469		"

(1) U. S. Public Health bulletin No. 132. (2) Illinois State Water Survey bulletin No. 23. (3) Report on sewage analysis, Parsons, Kansas, by Black & Veatch. (4) Report on sewage disposal for Wichita, Kansas, by Black & Veatch.

This table is by no means complete and, of course, does not give maximum and minimum figures, but it does show average sewage flows which vary from 44 to 280 gallons per capita daily and sewages which vary in strength (as expressed by B. O. D.) from .069 to .332 pounds per capita daily. Suspended solids as shown in this very limited list, vary from .093 to .608 pounds per capita daily, and it may reasonably be expected that a complete list would show still more variation.

In view of these wide variations, is it odd

that plants designed to handle an assumed flow of a sewage of assumed strength, should give fantastic results? As a matter of fact, is it not exactly what should be expected?

If we realize that the foregoing figures are averages over several weeks and that the sewage at each locality is subject to hourly, daily, and seasonal variations, in addition to any complications that may be interposed by the discharge of industrial waste, it is not surprising that results have not been ideal. In fact, it is rather wonderful that they have not been worse; and when we consider that. in less than ten per cent of the plants, are any records of sewage flow or sewage strength kept, our wonder naturally grows.

Recent experience at Wichita, Kansas, is indicative of the effect of analytical work on the plant design. If we leave the relative size of the cities out of the picture, it is evident that the treatment of the sewage of Wichita, which amounts to 136 gallons per capita per day and contains an average of .226 pounds of B. O. D. per capita, is something more of a problem than that of, say, Houston, Texas, which amounts to 75 gallons per capita and contains but .070 pounds of B. O. D. per capita.

In this particular instance, the relatively high strength of the sewage is due to waste from packing houses, oil refineries, and creameries, and in the plant design an allowance of over double the normal per capita capacity was necessary for some parts of the work. At the time these tests were taken in Wichita, the actual population was 106,000 and the industrial load, as determined by special gaugings and analysis, was equivalent to that of an additional 114,000 persons.

The collection of the data necessary for an accurate knowledge of the amount and character of the sewage at Wichita, extended over a year and included, in addition to the usual surveys, the measurement of sewage flow, the analysis of composited samples of city sewage and industrial waste, and a very careful check of the sources of industrial waste.

The plant design includes equipment for sewage measurement and for analysis, for the purpose of maintaining the record started during the preliminary studies. Whether or not this plant will be successful, cannot be foretold at this time, but its operator will at least not have to work in ignorance of the amount and character of the sewage.

Recent experience at Parsons, Kansas, offers an interesting example of what can happen when the sewage develops a character different from that contemplated in the design. An activated sludge plant built here in 1927, and designed on the basis of actual sewage gaugings, and assumed normal strength, failed to give satisfactory results. Upsets were frequent and the maintenance of a supply of activated sludge was impossible. The sewage was supposed to be domestic in character, but upon careful checking and analysis it was found that two large creameries, which were supposedly selling their buttermilk, were discharging it into the sewers at frequent intervals. By actual test, the organic load from a population of 14,000 persons was found to be the equivalent of the normal load from 46,000 persons. Provision was made at the creameries for drying the excess buttermilk and, since its exclusion from the sewers, the plant has given excellent results. This sounds like a very easy procedure, but, as a matter of fact, the necessary tests and experimental work covered several months and cost in excess of $3,000, but from the standpoint of economy, it was well worth while, since it kept an investment of approximately $100,000 from being a loss as far as the disposal of sewage was concerned.

Many instances similar to the foregoing may be cited but they all point toward the general theme of this paper, that is, toward the need of definite data in design and operation. The designing engineer should not only get the physical data required for plant design, but he should also determine the amount of sewage by actual gaugings of sewage flow, and the strength of the sewage by actual analysis.

Similar data should be gathered from time to time by the plant operator, or, if he does not have the equipment, this data should be furnished him by the city through the employment of parties equipped to do the work. The expense of maintaining full-time chemists at the smaller plants is probably prohibitive, but the results at stake certainly warrant enough consulting service to enable the plant operator to have an idea of what kind of sewage he has to treat.

The state, county, or municipal, health officer is not always consulted in the matter of sewage disposal, but, in view of the fact that sewage disposal is definitely related to the health of the community, it should be the duty of the health officer to see that the money spent for sewage disposal is not wasted. This, among other things, means that he should see to it that proposed disposal plants are designed for the particular problem in view and that the operators of these plants are provided with sufficient data to enable them to operate the plants intelligently.

In the case of many plants, this will ordinarily mean a rather detailed study of the local problem. Some industrial wastes may have to be excluded from the sewer system and some alterations or extensions may have to be made at the plant itself, but, after all, a careful diagnosis and a suitable prescription is as important to a sick sewage disposal plant as it is to a sick person.

CASE OF CHRONIC GALL BLADDER DISEASE

(Case presentation and discussion before the Staff Meeting of St. Joseph's Hospital, Phoenix, Ariz., Feb. 9, 1931).

Case Presentation by Dr. H. D. KETCHERSIDE

Mrs. B., age 60, white, admitted 11:35 a. m. Jan. 16. 1930. Admission diagnosis: cholecystitis, cholelithiasis.

F. H. Father died at 62, cause unknown; was ill four years. Mother died at 78, of cancer. One brother living, 50 years old. One brother died at 39, with dropsy (renal); one sister died at 50, cause unknown; two sisters living and well, at 55 and 53. Patient had seven children, four living, two died in infancy, one at eight years.

P. H. Has had asthma for 23 years. Does not remember about infections of childhood. For 15 years has had frequent attacks of pain in epigastrium, at times associated with jaundice and vomiting. For the past year, these attacks have been occurring about once a month.

Present Illness: On January 16, 1930, about 1 a. m., was stricken with severe pain in epigastrium, and vomiting. I saw her first about 5 a. m. She was in severe pain and was vomiting almost continuously. I gave a hypo of H. M. C. No. 1, which relieved her pain, but this did not stop the vomiting. She was moved to the hospital by ambulance about 11 a. m. She was given 5 per cent glucose in normal saline by proctoclysis, and hot water bottles were placed in the bed. Digitalis M. XXX. She was pale, skin cold and covered with perspiration. The pulse ranged from 120 to 138. Temperature 101°. By the middle of the afternoon, the vomiting had decreased, and the pulse was down around 100, quality good. January 17: Pulse 86, color good, vomiting stopped, patient comfortable.

Physical Examination: Obese elderly white female. Eyes react to light and accommodation, arcus senilis present. Ears, nose and throat normal—no teeth. No enlargement of thyroid. Chest symmetrical, expansion full and equal. No rales, fluid, or consolidation. Heart normal in size and position, sounds of good quality, no murmurs. Abdomen shows rather marked tenderness in entire right quadrant, more marked over gallbladder. No masses noted. Urine showed trace of albumin, 6 to 8 pus cells. Blood: 80 per cent Hg. Leucocytes 13,000. Polys, 99.

January 18: Highest temperature 100. Highest pulse 90. Entirely comfortable. January 19: Temperature 98.6; pulse 82. January 20: Temperature 98.2; pulse 82.70; coagulation time, 2 minutes.

January 21: Operated. Large thick gallbladder filled with stones. On account of adhesions around gallbladder and thick abdominal wall, gallbladder could not be removed. Stones were removed and gallbladder drained. Operation was done under ethylene gas given by Dr. Carson. Return from surgery in good condition. Pulse 103, good quality. Pulse taken at hourly intervals during afternoon, ranged from 98° to 104°. At 8 p. m., temperature 99.8; pulse 128; respiration 36. Vomiting bile. Condition remained unchanged during night.

January 22: Condition slightly improved, emesis clear. Temperature 99.6° to 100.6°, pulse 112 to 120. Respiration 26 to 28. About 2 a. m., pulse became rapid and weak—128. Patient became irrational. Digitalin 1/100 every 4 hours was started. Pulse became slower, but weak and irregular. Free drainage from gallbladder. January 23: Condition gradually grew worse and patient expired at 8:40 p. m.

DISCUSSION by
Dr. E. PAYNE PALMER

A careful review of the records of this case reveals that an obese woman, aged 60, entered the hospital January 16th last, with severe pain in the upper abdomen, nauseated, vomiting, high temperature, rapid pulse and and respirations, and in shock. The physical examination gave normal findings except a rather marked tenderness over the entire upper right abdomen, most severe over the gallbladder region. Urine showed a heavy trace of albumin and the blood coagulated in two minutes, leukocytes 13,100, hemoglobin 80 per cent. A diagnosis of chronic cholecystitis, cholelithiasis, and an acute gallstone colic was made. The patient was treated properly and the acute condition subsided. After a sufficient lapse of time and a careful study of her condition, she was prepared for operation. She had been given digitalis in 30 drop doses over a short period. She was given one of the least harmful of inhalation anesthetics by an expert anesthetist. A conservative operation, cholecystostomy, was done, January 21st. She was returned to her room in good condition and remained so until that evening, when there was a sharp rise in pulse rate and respirations, with frequent emesis. She was given glucose 5 per cent and normal saline solution intravenously, and stimulation. Her condition apparently improved for a while but became worse, and she expired the evening of the 23rd.

The records show that the patient had careful examinations and a correct diagnosis, was carefully prepared for operation, was given a safe anesthetic and a conservative operation, but in the end died. Why? Because her operation was delayed too long. The responsibility of her death is not on the men who had to do with her case in this particular illness, but rests upon the shoulders of the physicians who saw her in the early stage of the disease, or upon the patient and her family. The medical profession and the laity must realize that chronic gallbladder and biliary tract pathology are serious conditions. With rare exceptions, these conditions are amenable only to surgical treatment and should be operated upon as soon as the diagnosis is made and the patient is studied to determine his ability to

withstand operation. In cholelithiasis, medical treatment can not cure; it may make the patient more comfortable.

Chronic inflammatory changes in the gallbladder and biliary passages are frequently accompanied by changes in the parenchyma of the liver and pancreas, which not infrequently cause death, or, when operation is done late in the disease, death results because of the damage which has already occurred, as was shown by autopsy and a study of the specimen of the liver which was removed in this case. Cholelithiasis is only a part of a general hepatic disease. In practically every case of cholecystitis, there is an inflammatory process of the liver adjacent to the gallbladder and in chronic and severe cases there is both an interstitial and parenchymatous hepatitis. If there is any place in the body where chronic irritation is apt to produce a carcinoma, it is in the gallbladder and biliary tract, and it occurs only as a result of irritation due to gallstones. Procrastination in chronic cholecystitis results in arthritis, endocarditis, myocarditis, hepatitis, pancreatitis, neoplasms, gangrenous cholecystitis, atrophy of the gallbladder, cystic duct occlusion, common duct obstruction with jaundice, intestinal obstruction, and countless other pathological conditions. In early cases, the operative results are brilliant; in late cases, they are doubtful or hopeless. The mortality in these cases is usually traceable to procrastination.

CASE REPORT
Hypertension and Uremia

FELIX P. MILLER, M. D.
J. LEIGHTON GREEN, M. D.
El Paso, Texas

(Presented at the Staff Meeting of the Masonic Hospital, El Paso, Texas, Feb. 1932.)

This case presents a typical picture of terminal illness following prolonged hypertension and nephritis.

W. A. C., white male, aged 49, school teacher. Was treated in the Beall Clinic, Ft. Worth, Texas, in May, 1931. The clinic reports that he was unconscious and his tongue was injured from being bitten. Blood pressure at that time was 175 systolic, 115 diastolic. Systolic and diastolic murmurs were heard at the mitral heart valve, and on inspiration a diastolic murmur at the aortic area. Pulse rate was 84 per minute, regular. Babinski sign was present, bilaterally. Respirations were shallow. Temperature was subnormal. The urine showed a specific gravity of 1.005, with two plus albumin and a few hyaline casts. Blood sugar was found to be 120 mg. per 100 cc. of blood. Nonprotein nitrogen, 40 mg. per 100 cc. Uric acid 8 mg. and creatinine 2 to 3 mg. per 100 cc. of blood. Red blood cells numbered 4,500,000; white blood cells, 13,000; and hemoglobin 90 per cent, with 83 per cent polymorphonuclear leukocytes. The following day, patient was rational, but nonprotein nitrogen remained at 41.4 mg. per 100 cc. and phenolsuphonphthalein test showed 1 hour excretion of 30 per cent; 2 hours, 15 per cent; a total of 45 per cent. Wassermann and Kahn tests were negative. On the third day only a trace of albumin was found in the urine and no casts. Recovery from this attack was not complete, for the patient was unable to resume his school work.

He was seen by Dr. Felix P. Miller on Nov. 20, 1931. His previous attack, as above described, was diagnosed by the patient as a "light stroke." His blood pressure, he stated, had usually ranged from 165 to 180, but at times had risen to 200 or 240. Family history was irrelevant, except for the fact that his mother died from Bright's disease and dropsy at the age of 60. He recalled a left retinal hemorrhage at the age of 35, another hemorrhage in the right eye later, with subsequent recovery.

The chief complaint was of occipital headache, and he also complained of edema in the right leg. Blood pressure was 242 systolic, and 150 diastolic, in left arm. In right arm, 258 systolic and 160 diastolic. The heart was found enlarged to the left, and the aorta was wider than normal. Fluoroscopy confirmed these findings. No edema of extremities could be detected. The urine showed albumin two plus, with many fine granular and coarse granular casts, occasional red blood cells, and occasional white blood cells.

Potassium iodide, minims ten t. i. d., was prescribed. Hypertension diet was advised.

On November 28, 1931, the patient was again seen at our office. Blood pressure was 210 systolic, 110 diastolic. He was not seen again until his admission to the Masonic Hospital, El Paso, on December 8, 1931. A history was obtained of malaise on December 5 and 6, headache on December 7, delirium and vomiting on December 8. On admission, patient was semi-comatose, restless, irrational, responding slowly to questioning. Temperature was 97.4°, pulse rate 74, strong and regular. Blood pressure was 250 systolic, 158 diastolic. Arteries were firm, not easily compressed. A soft systolic murmur was heard at the aortic area, other heart sounds were clear. Pupils were dilated, but equal, and reacted well to light and accommodation. No evidence of paralysis was detected, and no abnormal reflexes were elicited. There was no edema. Urine revealed specific gravity of 1.012, with albumin two plus, and a few hyaline casts. Headache was the only complaint, but it seemed severe.

On December 10, examination of the eyegrounds was made by Dr. Bloyce Britton. He reported: (1) marked arteriosclerosis; (2) increased intracranial pressure; (3) optic papillitis, right, with beginning left.

Spinal puncture was done on December 10. Pressure was 8 mm. of mercury and the fluid was reported normal. Blood pressure dropped to 202 systolic, but on December 11 had risen again to 260. Venesection was resorted to, followed by intravenous injection of 50 per cent glucose. Vasodilators continued to be administered by mouth. Saline purgatives were given freely. The nurse's chief concern was in quieting an extremely restless patient, for which purpose chloral hydrate proved most effective. Pantopon was resorted to on several occasions when the patient became unruly. Blood urea on December 11 registered 50 mg. per 100 cc. of blood. Output of urine became scanty and catheterization was necessary. On December 12, the total recorded output was 360 cc. Diuretin was administered and the output increased to 500 or 700 cc. each day.

During his last conscious hours the patient complained of blurred vision and headache. On December 16, Dr. Britton reported increased papillitis in the right retina, with enormous venous distention and small petechial hemorrhages in the left retina. Spinal fluid on December 15 showed a trace of blood. December 17, a strong systolic blowing murmur was heard at the mitral area, with less mared

systolic murmur at the aortic and pulmonary areas. Blood urea had risen now to 95 mg. per 100 cc. of blood, blood sugar was 145 mg. and creatinine 10 mg. per 100 cc. To the best of my knowledge, the prognosis is invariably fatal when blood creatinine exceeds 5 mg. per 100 cc. of blood. Urine showed four plus albumin, but no casts.

Blood pressure remained below 100 systolic for the remaining week. The temperature had stayed below 100° during the early part of the illness. On December 16 it rose to 102°, and again, on December 21 to 101°. Pulse and temperature continued to rise, auricular fibrillation developed in spite of administration of digalen, and on December 22 Cheyne-Stokes' breathing was observed. Temperature rose to 103.4° and the patient was apparently moribund. He hung on, however, until December 24, when respirations again became sonorous and irregular, and his heart failed. Unfortunately, permission for autopsy was refused.

The final diagnosis was:

(1) Hypertension and arteriosclerosis.
(2) Chronic nephritis.
(3) Cerebral edema.
(4) Uremia.
(5) Cardiac Dilatation.

CASE REPORT

J. TRAVIS BENNETT, M. D.
El Paso, Texas

(Presented at the Staff Meeting of the Masonic Hospital, El Paso, Texas, Feb. 1932.)

Child, female, age nineteen months. Admitted to the Masonic Hospital, 9:30 a. m., January 6, 1932. Died January 6, 1932, 1:25 p. m.

Family History: Not contributory.

Personal History: In February, 1931, green-stick fracture of the left clavicle, followed in three months by an abscess in the region of the left shoulder, which was opened twice and drained little. Subsequently, two other abscesses developed, one on the left shoulder and one in the left axilla, which drained several weeks, but finally healed. In September, 1931, patient was bitten by a rabid cat on the left hand, for which she received anti-rabic treatment for twenty-one days.

Present Illness: Onset was sudden. Sunday night, January 3, 1932, mother noted she would awaken from her sleep suddenly, as if frightened. Next day she appeared to be in a stupor from which she could be roused. She had fever, temperature reaching 103.5°. At times her jaws became set rigidly, but she was able to swallow and did not froth at the mouth. There was no nausea or vomiting, and the stools were normal. Until the time of admission, her fever remained high, convulsions were frequent, and her condition gradually became worse. Treatment was symptomatic. Patient was seen at home just prior to admission; temperature, 104°. The most striking feature was rigidity of the muscles of the jaw (although the mouth could be pried open) and a peculiar apprehensiveness of features when she was approached, amounting almost to terror. She opened her eyes wide, pupils became dilated, and child began to cry out. When touched, she immediately exhibited a tonic spasm of the voluntary muscles, opisthotonos. A more violent reaction, amounting to a generalized convulsion, was caused by sudden flexure of the neck on any attempt to turn child on either side. Morphine gr. 1/12 (hypo) did not entirely prevent recurrence of convulsions.

Physical Examination: Temperature 106° (ax.) Semi moribund. Slightest stimulus causes generalized tonic spasm of muscles of body. Jaws rigid, but can be pried open. Pupils contracted (morphia), were wide and reacted. Mucous membrane of the mouth dry, reddened; considerable sordes. Slight stiffness of neck. Heart and lungs negative except for few fine rales at bases following convulsion. Abdomen moderately distended and tympanitic; no rigidity. Three old scarred sinuses in region of left shoulder. Muscles of extremities are tense. Reflexes hyperactive. Babinski not obtained. Tache cerebrale absent. Cerebrospinal fluid clear, under increased pressure, 5 cells.

Diagnosis: (1) Tuberculous meningitis, suspected because of old tuberculosis scars on left shoulder. Onset more sudden than usual and course more stormy. Peculiar apprehensiveness and hyper-irritability of child is against tuberculosis. Elevated temperature is against it. Absence of tache cerebrale is against it. (2) Tetanus; sudden onset and rapid course with rigidity of jaw muscles and hyper-irritable nervous system, favor tetanus. There was no rigidity of abdominal muscles and no demonstrable lesions. (3) Rabies.

Course: Following lumbar puncture, numerous enemata were administered, together with chloral hydrate and sodium bromide and, finally, chloroform by inhalation. Convulsions continued at intervals in spite of sedatives; abdomen became greatly distended and tympanitic, and temperature rose. Throat rapidly filled with mucus, breathing became irregular, and body became livid. Death ensued at 1:25 p. m.

Final Diagnosis: Tetanus.

Dr. Stevenson was of the opinion that it was rabies. He had seen the child at least two days before admission to the hospital. He had been called because the child was having some difficulty in swallowing. He had no trouble in examining the child's throat and found it to be normal. He saw the child again, once or twice, before admission to the hospital. The last time he saw the child, he noticed that she appeared fearful. Examination of throat was made again without any difficulty. Child had a convulsion at this time that was characteristic of rabies.

AUTOPSY REPORT: (Dr. Geo. Turner) The body is that of a nineteen-months-old girl child. Nutrition is good. There is a scar at the right anterior margin of the axilla. This scar shows complete healing. There is an open sinus above the left clavicle. This sinus leads to a suppurating supraclavicular gland. The lungs and pleural cavities show nothing abnormal except for a small area in the lower anterior aspect of the right upper lobe. This area of lung tissue is firm and presents a light brown color. Sections show interstitial fibrosis, together with round cell and polymorphonuclear cell infiltration of both the interstitial tissue and the air cells. Many of the air sacs are filled with polys. There is a small area of interstitial pneumonia. The heart is normal. The thymus is rather large. The liver, intestine, stomach, spleen and kidneys show nothing abnormal. The brain shows possibly slight congestion. The pineal body is a little large and irregular but its microscopic structure is normal. There is no evidence of Negri bodies in the brain. It is my opinion that death came from tetanus. There is no evidence to show that other type of infection existed.

CASE OF SEPTICEMIA FOLLOWING REMOVAL OF GANGRENOUS APPENDIX IN A DIABETIC

J. D. HAMER, M. D.
Phoenix, Arizona

(Presented before Staff Meeting of St. Joseph's Hospital, Phoenix, Ariz.)

CASE 18418.

Personal History: The case of a male, age 57, retired meat packer, who entered the hospital December 10th last, and expired December 28th. The

patient entered the hospital at 2:15 p. m., Dec. 10, after being sick since the night before. He, on the night of Dec. 9, was attending a dinner at a local hotel, and ate a very heavy dinner. About ten o'clock he began having cramps in the abdomen, chiefly in the epigastric region, and within a short time was nauseated, and vomited several times before the next morning. Two enemata were given that night without relief, and the patient stated that within a few hours he felt very ill, suffered chilly sensations, backache, headache, and violent cramps in the abdomen, colicky in nature, and not relieved by remedies used in the hotel. The physician was not called until the following noon and, although the patient admitted that he should have listened to the advice of his wife to summon aid during the night and the next morning, yet he did not yield until late on the morning of Dec. 10.

Family History: Patient married for many years. Wife's heart had always been good, except that she suffered an operation at one time that caused her to be sterile. Father had died at age of 64, from complications attending a fractured hip. Mother deceased, age and cause unknown. Patient had three brothers, two of whom had died between the ages of 50 and 60, one from cardiac failure attending hypertension, and the other from apoplexy; and the third brother had died of typhoid fever. The patient hinted at the fact that there had been a long history of early age deaths, on the father's side of the family, from high blood pressure.

Past History: The patient acknowledged after considerable questioning that he had had a similar but less severe attack of the same illness about six months ago, and that he had refused operation at that time, although advised to have one. For the past two years, the general health had not been so good, but no especial attention had been given to this fact, although he had been asked on numerous occasions to seek medical examination and advice, by the wife. For so many years he had been exceedingly robust and well, and he rather felt that nothing could happen to him. He had always been a very heavy meat eater. However, as stated, the last two years had seen a considerable change in the physical condition, the weight had dropped from 235 lbs. to 185 lbs., he had noticed occasional dizzy spells, and throbbing sensations of the head at times, occasional headaches, some loss of strength. Two months ago he did visit a physician, and, after a slight amount of study, was told that he had diabetes, and was given advice about eliminating the sugar-containing substances from his menu. This advice, in general, was ignored, except that he had taken regularly a proprietary medicine for his diabetes.

Physical Examination: The patient when first seen appeared to be acutely ill, with a temperature of 100.6°, pulse 108, regular but weak in volume, blood pressure 146/79, respirations 28, regular, but rather short and grunty in the expiratory phase. There was an odor of acetone on the breath, the nutrition was fairly good, the skin dry, and the body, in general, appearing dehydrated. Examination of the head showed a partial frontal and vertex alopecia; dull, listless expression of the eyes; an erythematous hue to the cheeks; dry parched lips and tongue; and teeth showing very poor care. The neck was normal. Chest was huge in all dimensions, and the lung fields clear. The heart was slightly enlarged, especially the left ventricle, the border extending 1/2 cm. beyond the nipple line, and the apex was under the sixth rib.

Heart action was regular, but the tones were weak. The aortic second sound was somewhat accentuated, and had almost a typical tympanitic pitch. No murmurs could be heard. There was a slight degree of atheromatous change in the caliber of the arteries of the forearm. The abdomen was not distended, nor rigid in any portion, but upon deep pressure, tenderness could be located about McBurney's point. No tumor masses, nor enlarged viscerae were palpable. The G. U. system externally was negative, as were the extremities and nervous system.

Preoperative Care: Urine analysis taken before operation showed 2.5 per cent sugar, granular casts, hyaline casts, a high concentration of the urine, albumin and acetone bodies. White cell count was 19,700, with 92 per cent polys. The patient entered the hospital at 2:15 p. m., and about 2:30, as preparations were being made to give him intravenous fluids and insulin, he was seized by a severe chill, which lasted 30 minutes. This chill was about 2 hours before he was operated on.

Operation: At operation, a densely adherent, large, bulbous type gangrenous appendix was found deeply buried close to the spine behind the cecum, and containing large fecalith. The appendix mesentery was purplish-red in color, and portions of it appeared almost gangrenous. There was no purulent material observed outside the appendix, but there was a small amount of serous exudate free in the abdominal cavity. An intravenous solution of glucose and saline, together with 4 units of insulin were given while the patient was on the table. Ethylene anesthetic used.

Postoperative Notes: The first postoperative night was satisfactory, and the next day the patient appeared bright and apparently was doing nicely, but after that, due to the changes and turn of events as hereafter described, it was a battle for life. Sensing possibly that a battle would be on, orders were left for a daily blood sugar, complete urinalysis, blood chemistry of the nonprotein nitrogen products, blood grouping, and blood culture; and fluids were given in large quantities by vein. Insulin was given daily to cover most of the excess of blood sugar, although during the course of his illness, it was most difficult to calculate in advance what would be needed, because of the difficulties encountered in properly fixing and forcing a diet. Rather extensive progress notes were made on this case, so I will quote from them in an attempt to trace the postoperative course.

Dec. 11. Condition quite satisfactory this morning. Patient states he feels very good. Trace albumin in urine, with granular casts. Blood sugar .22 per cent.

Dec. 12. Patient had two chills today, with a rise in temperature and a delirious condition tonight. The kidneys are not excreting properly. An examination for signs of septicemia: not found. Condition definitely worse. Urea 3.6 per cent, heavy trace of albumin, sp. gr. 1.030. Total solids 71.6. Blood sugar .20 per cent. Intravenous glucose and saline and insulin 4U., given at noon. Concentrated magnesium sulphate given during night, one ampule every 2 hours for 4 doses. U 10 of insulin was given during the night, and heart stimulants were begun.

Dec. 13. Patient had severe chill at 3:45 a. m. Pulse dropped suddenly to 60 at 9:00 a. m. Patient had a poor night, and condition is very bad. Sugar in urine negative. Blood sugar .18 per cent. Urea increased .2 per cent over yesterday, but the kidneys apparently are functioning better. Heart action is irregular and varies at times in strength and volume. Highest temperature 102.4°: pulse 120, highest. Blood culture after 24 hours shows no growth.

Dec. 14. Condition not improving satisfactorily. Blood urea increased to 4.5 per cent; total solids 91.2. Blood sugar .17 per cent. Patient had a severe chill this evening, lasting 20 minutes, with rise in temperature and pulse following. Diuretics and stimulants given at intervals.

Dec. 15. Condition shows no improvement. Pa-

tient still chilling at irregular intervals, but has had no prolonged chill today. The laboratory reports a positive blood culture of undetermined type this morning. Patient was transfused 500 cc. of blood today. Urea 4.5 per cent. Total solids 91 per cent. No casts, heavy trace albumin. No acetone bodies, in urine.

Dec. 16. Condition not improving. No apparent reaction to the transfusion. A streptococcus strain was cultured after 72 hours and identified after 96 hours, in the blood culture. Prognosis in this case is not favorable. Patient had another severe chill this morning. Albumin positive. Sugar in blood .25 per cent. Urea 4 per cent. A blood creatinin showed 1.95 per cent. W. B. C., 9,700. Polys 88 per cent; monos 12 per cent. Doses of streptococcus serum begun.

Dec. 18. Temperature tonight is lower, and there seems a slight improvement in the general condition. 400 cc. of blood was given this afternoon by transfusion. Patient has not had chill now for 36 hours. Blood sugar up to .25 per cent today. Albumin positive, and urea was 5 per cent, no casts.

Dec. 19. Blood sugar .15 per cent. Urine output is fairly satisfactory, with no impending signs of uremia. During last 18 hours, up to tonight, patient had two severe chills, at which time condition of heart was very bad; its action was not so strong, and more rapid. At times the circulation is poor, the lower extremities cold and bluish in spots. The prognosis is certainly not favorable. A slight roughening and prolongation of the first sound over the apex was heard today, suggesting the onset of a valvulitis. Urea dropped .5 per cent today.

Dec. 20. Patient has had a very poor day, with rapid, uncertain heart action, and tendency to restlessness. Sclerae of eyes, and body are becoming jaundiced. The incision is draining small amount of foul-smelling serosanguineous material. No rigidity of the abdomen, but considerable difficulty is encountered with distention. Blood sugar .22 per cent. Urea 4.5 per cent.

Dec. 21. Condition is grave. Patient has had a bad day, restless, mentally cloudy, dyspneic, and jaundiced. Had another chill early this morning, also a severe sinking spell about 7:00 a. m. Blood sugar .29 per cent. Intake and output not so good today. Patient struggles on trying to take nourishment. Bowels are badly distended, with very little results with treatment.

Dec. 22. Patient irrational the whole day, with irregular breathing. Pulse has been weak and irregular all day, and tonight there is Cheyne-Stokes's respiration.

Dec. 23. Patient, in general, has had a slightly better day. Temperature has not gone up so high, pulse has stayed better quality, but the abdomen has been distended in spite of intensive treatment. Transfusion of blood given today. Urine shows a drop of urea to 2.5 per cent. Blood sugar .28 per cent.

Dec. 24. Pulse and respirations are up again tonight, and patient is moderately irrational. The distention is much less after an all-night battle. Blood sugar .29 per cent. Patient continues on heart stimulation at regular intervals. Insulin is being given daily. Blood urea 2 per cent.

Dec. 25. The abdomen distends frequently in spite of free movements and stupes. Patient had a more quiet day, with less variation in pulse and temperature.

Dec. 27. No improvement can be noted in condition. Patient is restless, irrational, and fails to take nourishment by mouth. Hypodermoclysis and blood transfusion given today. Blood count showed Hb. 65 per cent; R. B. C. 4,088,000; W. B. C. 17,500. Urine shows albumin, pus cells, no casts. Blood sugar .28 per cent. No signs of pneumonia, after daily examinations of the chest, has ever been found. Blood culture taken on Dec. 25, showed no growth in 48 hours.

Dec. 28. Condition this morning is grave. Pulse is rapid, irregular, and weak. Breathing is dyspneic, with considerable mucus in trachea and moisture in lung bases. The body is cyanotic, with purpuric spots on legs and chest. Assisted by stimulation, patient continued to live until 10:30 p. m. Wife refused permission for us to do anything further during the day.

COMMENTS

Obviously, this patient was a poor surgical risk. The presence of diabetes alone would have made him so, but we felt that we could control that feature of the case. It is true, too, that the kidneys were not good in the capacity for doing their particular work, but after four or five days, with intensive treatment, they gave us no especial alarm. What was the cause of this man's death? I believe that he was stricken with a fulminating streptococcus infection of the appendix, with rapid development of gangrene, with extension of the process of bacterial invasion of the lymphatics into the mesentery, and possibly producing septic thrombi in the vessels of that region, with the result that septic emboli were thrown off into this man's blood stream even before he was brought to surgery, as evidenced by the severe chill which he had that afternoon. The emboli continued to invade the general circulation from time to time during his attempted convalescence. The septic process also continued locally as evidenced by the appearance of the characteristic foul-smelling incisional discharge. Certainly, the positive blood culture, and the evidences of endocarditis, the jaundiced condition, the septic type of temperature, would prove a widely disseminated infection of the system. Probably the strain of streptococcus employed did not have the capacity of rapid growth and development, as evidenced by the length of time in culture before demonstration and by the length of time this man lived. Gangrene of the appendix probably would not have developed quite so quickly, had it not been for the fact that a very large fecalith was found lodged at the junction of the appendix with the cecum, thereby occluding drainage and permitting an accumulation of the inflammatory exudate. I am very sorry that I was not able to get an autopsy on this case, but, in spite of a plea, permission was not granted.

DISCUSSION

S. I. BLOOMHARDT, M. D.
Phoenix, Arizona

The discussion of a case history with a diagnosis of gangrenous appendix, diabetes, nephritis, streptococcic septicemia, acute endocarditis, acute hepatitis, and other sequelae, is a huge task and a difficult one Certain it is, a patient with all these numer-

ous pathological conditions, a host to one of our worst bacterial enemies, the streptococcus, had a right to die, and it is only due to the splendid treatment, the careful nursing, and some of our advanced and modern treatments, that he lived for the period of days which he did live, and it makes me wonder, with such a rapid advance and improvement in medical and surgical treatment, our great research laboratories and clinical study, in future years and, perhaps, not too far off, are we going to be able to patch up such cases and make them useful again? It is a pleasant thought to dream of and strive for. Let us take, for example, the question of diabetes and surgery, which I will divide into the pre-insulin and post-insulin periods. In the pre-insulin period, the post-operative complications were so grave and the mortality so high that only operations of absolute necessity were attempted. A mortality of 30 to 45 per cent was the average in the pre-insulin days, and between 60 and 85 per cent of these deaths were due to coma, which is now, under proper treatment, preventable, and the surgical mortality since the addition of insulin has been so reduced that some enthusiasts feel the operative procedures in the diabetic are as safe as in the non-diabetics of similar age and physical status. The average mortality at the present time is 12.7 per cent.

As far back as 1910, Mayo Robson referred to relationship of infections of the gallbladder and the production of diabetes, and said that diabetes might be averted by the early removal of the gallbladder, and this, I believe, is generally accepted today. Perhaps other local infections have a similar bearing —certainly, other local infections are known factors in exaggerating an already present diabetic condition. So, when possible, the local infection should always be removed.

To return to the acute gangrenous appendix: it should have been removed six months previously. In this case, the patient was advised to have it removed and would not consent to operation, so the physicians are in the clear. The seriousness of appendicitis as a professional problem is indicated by recently collected figures from the Bureau of Vital Statistics, which show that 25,000 people die annually in the United States from the acute form. The mortality rate from the acute appendix which has not ruptured or which has not an accompanying mesenteriolitis, is very small.

In regard to this type of case, just reviewed, a large amount of progressive study is being done, and these studies lean toward the thought that inflammations of the appendix are constantly being paralleled by changes in the course and character of the blood vessels and that mesenteriolitis, beginning as a collateral involvement, may later constitute an infection independent of the original appendicitis. First, we have hyperemia, edema, and early damage to the blood-vessel wall; at a more advanced stage, lymphangitis and lymphadenitis, and pus formation. If the infection does not subside, we have infection of the mesenteric vessels interfering with the blood supply to the appendix and naturally leading to gangrene. Next, are ascending septic thrombosis, leading to pylephlebitis and multiple hepatic abscess. Of the microorganisms in this type of case, again the streptococci seems to play the main role. Complications in the mesenteriolum may arise even after the appendix has been removed. Some of our best men are advocating a ligation and resection of the ileocolic vein as a routine measure in this type of appendix. If diagnosis is made before operation, the ligation is made before removal of appendix. The procedure is a difficult one but certainly an advance for the betterment of patient and our own mental welfare, because, if there is a grey hair producer among us, such appendix cases seem to be very near the lead.

In summary of this brief discussion: In trying to keep abreast of this rapid, progressive, scientific age—by many called the jazz age, but, even with such a name, I think, a progressive age—we have made a wonderful advance in the control of diabetes and, as is shown in this particular case, with the insulin treatment of diabetes accompanied by surgery. With the study and relationship of the streptococci to nephritis—although we do not know the exact relationship—even so, we are removing the diseased streptococcic focal infections; we have a useful serum for scarlatina that great forerunner of nephritis, and a general anti-streptococcic serum which we are sure will lessen our damaged kidneys. In regard to diseased appendices, the practitioner and the surgeon are diagnosing and operating them earlier, so that we do not have so many gangrenous ones and, consequently, not so many mesenteriolitis, pylephlebitis and hepatic abscess cases and not so many of general peritonitis. If we do not get in the belly soon enough and the patient has appendicitis, plus chills, we recognize definite mesenteriolitis, and our teachers and men of great experience tell us to ligate the ileocolic vein, and if this is possible, the mortality rate drops, because it does not permit the infection to ascend to the portal system and liver.

It would seem that the mistake this patient made was a refusal of operation six

months previous, when he had the symptoms of acute appendicitis and refused to have the appendix removed. Possibly, at that time, he had a streptococcus infection of the appendix and this, in some respects, may account for this nephritis. The role of the streptococci in the etiology of acute and subacute bacterial nephritis cannot be denied. From the work of the Dicks and many others, we now appreciate the specific relation of the streptococci to acute and subacute glomerulonephritis. It is still in doubt as to the manner in which the streptococci produce the lesion. It is well known that the renal impairment does not usually appear when the streptoccic infection is most acute, but in the subsiding stages, possibly due to an intermediary product. We are making advances in the control of the streptococcus and, naturally, we are going to expect to find, as time goes on, many less damaged kidneys.

CASE REPORT

JOHN A. HARDY, M. D.
El Paso, Texas

(Presented at the Staff Meeting of the Masonic Hospital, El Paso, Texas, Feb. 1932.)

Patient gave the history of having been suddenly taken ill with acute pain in the upper abdomen, accompanied by nausea and vomiting. She also complained of dizziness. The pain persisted and grew in severity, so that about an hour later I was consulted. At the time I saw patient, she was definitely in shock. Because of the extreme tenderness and rigidity in each fornix, nothing definite could be outlined by vaginal examination except a large tumor that extended from the pubis to the umbilicus. Patient had noticed an enlargement of her abdomen about four years ago; at that time she noticed some backache and abdominal discomfort. About three years ago, she had her first attack of abdominal pain accomanied by nausea and vomiting, which she termed "acute indigestion." Since that time, she has had several similar attacks. Her abdomen has gradually increased in size. About two years ago, x-rays were taken of her abdomen and a tumor was found at that time. (Patient does not know the location of the tumor.) Her menstrual periods have been regular. She has had no fever. No frequency or burning on urination.

On admission, patient was given 450 cc. of normal saline and glucose 5 per cent intravenously, and she was taken to the operating room. A diagnosis of (1) ovarian cyst with a twisted pedicle; (2) degenerative uterine fibroid, was made.

On opening the abdominal cavity, a large quantity of fresh blood and blood clots were found. The source of the hemorrhage was found to be from a ruptured varicose vein on the outside of one of the fibroids. There were from four to five fibroids, varying in size, attached to the uterus. The appendix was also found to be acutely inflamed. A supravaginal hysterectomy and appendectomy was done. Patient's postoperative condition uneventful.

Postoperative Diagnosis: Multiple uterine fibroids.

HEART SYMPTOMS IN A SYPHILITIC
(Diagnostic Discussions)

J. D. HAMER, M. D.,
H. D. KETCHERSIDE, M. D.,
Phoenix, Arizona

(Discussions of Case No. 13371, Case Records of the Massachusetts General Hospital, from Boston M. & S. Jour., Sept. 15, 1927, page 437).

CASE HISTORY

A bricklayer fifty-seven years old came to the hospital seven years ago. A large lipoma was removed from the midscapular region. He made an uneventful recovery and was discharged in nine days. He gave a history at that time of hacking cough, especially in cold weather, some dyspnea on exertion, syphilis twenty years previously with treatment at intervals since that time, and "rheumatism" five years previously. On examination a rough systolic murmur was heard over the precordia, best heard at the aortic area but fairly well heard in the midaxillary line and just audible over the left back; also a presystolic rumble, best heard at the aortic area. Dr. White noted that the heart and great vessels were enlarged.

The patient was treated for the next six months in the Out-Patient South Medical Department. His Wassermann was strongly positive.

January 27, seven years after his first entry, he was readmitted. Since his first admission he had been under treatment by a syphilologist. He now said his dyspnea on exertion was of ten years' duration. He had noticed no increase. He had not followed the advice given him at the hospital to obtain lighter work. Occasionally he had some dizziness, and at times, generally at night, palpitation. He had had no edema. His left leg had been swollen thirty years as a result of an accident. For the past year he had had increasing nycturia and some frequency during the day, especially when he was working. Nine months before admission the dyspnea became worse and he also had a sense of severe pressure over the heart and lower chest on exertion, taking his breath away, stopping with rest and leaving him rather weak. It took him nine days to do the work he formerly did in two. After three weeks' rest he was able to work again at a more moderate rate, and had little trouble except from dyspnea and pain until two weeks before his readmission. Then he found himself too weak and dyspneic to work. He found he needed two pillows at night. The weakness and dyspnea continued in spite of rest. During the past two weeks his feet had been swollen during the day, especially the right, and his right leg.

He gave a family history of fatal tuberculosis in three sisters and one brother. The patient was a moderate drinker. He now gave a history of gonorrhea at the same time that he had syphilitic infection.

Clinical examination showed a very obese, cyanotic, orthopneic and dyspneic man sitting up in bed. Perforated nasal septum. Tongue very dry, with atrophied papillae. Pulsation seen on both sides of the neck. The whole precordium heaved. Apex impulse of the heart in the sixth space 15.5 centimeters to the left of midsternum, right border 7.5 centimeters to the right, supracardiac dullness in the second space 6 centimeters to the left, 3 to the right. At the apex and transmitted into the axilla and up over the lower part of the precordium were loud harsh systolic and diastolic murmurs in immediate succession. The systolic had a very intense musical quality and was heard in the right axilla as well as in the left. At the aortic area were extremely loud systolic and diastolic murmurs replacing the heart sounds, transmitted into the neck

(Continued on page 138)

DIABETIC COMA

J. M. PEARSON, M. D.
Glendale, Ariona

(Comments in connection with review of deaths at Good Samaritan Hospital, Phoenix, Arizona, at the December, 1931, Staff Meeting of this hospital).

During November there occurred seven deaths in this hospital. There was one autopsy performed.

Case 12635, female, age 58. Cause of death, arteriosclerotic heart disease with failure, cerebral arteriosclerosis with depression. No note-worthy features.

Case 12460 and 12747, patient being in hospital for two different periods. Female, age 44. Cause of death, bronchial asthma, allergic in type. Physical findings showed no pathology other than the usual pulmonary evidence of asthma, no cardio-vascular changes. The treatment by means of twice-cooked and strained vegetables, twice-cooked cereals, condensed milk and Karo syrup, brings to mind the fact that many students of nutrition are mentioning in their writings the possibility of the development of a state of "avitaminosis" with resultant lowering of the patient's powers of resistance. This condition has been found to occur at times during the treatment of epilepsy by means of the ketogenic diet, also during the prolonged treatment of peptic ulcer by means of twice-cooked gruels, and in other diseased states that are themselves amenable to dietary measures. The current literature contains several articles on the increasing prevalence of pellagra and there is every reason to believe that minor degrees of deficiency diseases are frequently present along with other pathology which holds the center of the stage and excludes other possibilities from the mind of the medical attendant.

Case 12587, male, age 34. Case of far-advanced pulmonary tuberculosis; history and physical examination well written up, progress notes frequent, consultation properly recorded at time of examination.

Case 12500, female, age 41. First admission August 4th, for cholecystitis, relieved by cholecystectomy. Re-admitted in October with a diagnosis of hydronephrosis. November 2, nephrectomy was performed, but patient persistently failed in strength and died, Nov. 11, of exhaustion.

Case 12745, male, age not given. Case of fracture-dislocation of the fourth cervical vertebra, with resultant compression of the cord and death in 24 hours after the receipt of the injury. Autopsy.

Case 12720, male, age 22. Cause of death, severe electric shock and burns with toxemia; death in four days after admission.

Case 12810, male, age 14, admitted in diabetic coma. History was typical, polyuria, polyphagia, loss in weight, sudden onset of stomach ache, vomiting, and weakness. Stupor, delirium, Kussmaul breathing and soft eyeballs now became apparent. In other words, the boy entered the hospital with the diagnosis of diabetic coma written across his face in large type. No one can dispute the fact that here was a terribly ill boy, but the fact seems to have been recognized only after the boy had been in the house forty-eight hours, when a consultant was called and vigorous treatment was instituted.

The boy was admitted at 12:45 p. m. He received his first dose of insulin at eight-thirty that night and, though 40 units were ordered, only twenty were given. During his first twenty-four hours in the hospital, he received forty units of insulin in spite of the fact that his blood sugar revealed the startling figure .88 per cent and the urinary sugar 1.3 per cent, with acetone present. The second day he received more insulin (85 units) and the third day still more (120 units). Dehydration was treated by proctoclysis and hypodermoclysis, but the blood sugar was never lower than .33 per cent, nor the urinary sugar lower than 1 per cent, at times being as high as 4 per cent.

Our Historian has been kind enough to gather the record of cases of diabetic coma admitted to this hospital during the past three years. Prepare for a shock when I record the humiliating fact that, out of nine cases admitted, eight have died. Shall we ascribe this fact to impotence on the part of insulin to control these cases? Most emphatically, No! At the New England Hospital, since 1923 Joslin reports 170 cases, with 13 per cent mortality. St. Luke's Hospital, New York City, treated 163 cases in 1923-1924, with a mortality of only 7 per cent.

Authorities are agreed on the fact that every case of diabetic coma constitutes an emergency of the gravest nature. Would one treat a case of ruptured ectopic pregnancy or a ruptured peptic ulcer in a dilatory manner? If we are to lower our mortality in this grave condition, one thing is essential. Every man who undertakes the treatment of such a case must realize that only by immediate and heroic measures can the patient be saved. Neither is it a one-man job, but there must be coordinated effort with visiting physician, house man, laboratory worker, and nurse, all working to save the patient's life, which, it must be kept in mind, is hanging by the merest thread.

Giving forty units insulin in the first twenty-four hours in such a severe case as this one, is comparable to giving five drops of tincture digitalis every four hours when digitalization of a patient is required. Gray and Sansum report a case of coma in which the blood sugar reached .9 per cent, with recovery. During the first sixteen hours 630 units of insulin were given, 560 being given in the first eight hours. Insulin was administered every fifteen minutes and the blood sugar determined every two hours. Joslin mentions a case of a boy 14 years of age who required 740 units in 24 hours. It may be argued that these men are specialists in this line. True, but no special technical skill is needed to give adequate dosage, for the blood sugar and urinary sugar are safe guides in prevention of overdosing.

While diabetes is undoubtedly a more difficult disease to treat in the young, not so with diabetic coma, for Joslin gives the mortality in 170 cases by decades. The first decade showed no mortality, the second showed 3 per cent mortality, with the highest in the sixth decade, with 43 per cent. Joslin stresses the value of necropsies in such deaths, as he has had two cases in which death was proved to be due to suppurative pancreatitis. Without such information, one might be inclined to lose faith in insulin in the treatment of diabetic coma. Inasmuch as occasional cases recover with small amounts of insulin, Joslin prefers to administer 20 to 40 units at intervals of fifteen minutes to one hour. As the blood sugar and urinary sugar approach lower levels, interval between doses is increased.

Besides adequate insulin dosage, other valuable measures include conserving body heat, treating dehydration, lavage of the stomach, emptying the colon, and support of the heart. Sodium caffeine benzoate is the most popular remedy for the latter purpose, but, though Joslin formerly used it freely, he now is more cautious, due to the fact that it has been shown that this drug produces a rapid loss of glycogen from the heart muscle and, naturally, the safety of the heart deserves great consideration in such an up-hill battle for life.

Allow me to close these random remarks with two

short quotations, the first from the pen of that master of diabetic teaching, Joslin: "Eternal vigilance and simultaneous observations by the bedside and in the laboratory, day and night, alone can save the patient in diabetic coma."

Frederick M. Allen, another master in this field, states: "If all skilled surgeons in this country were suddenly eliminated and all operations were to be performed by physicians with no previous special training in surgery, there would be a rise in the surgical death rate, but this rise would be insignificant in comparison with the enormous number of present-day diabetic deaths which could be prevented by sufficient skill on the part of the attending physician."

PUBLIC HEALTH NOTES

J. ROSSLYN EARP, M. D., Dr. P. H.
Director New Mexico State Bureau of Public Health

AGE INCIDENCE OF TYPHOID FEVER

The question has been raised in correspondence with the the New Mexico Bureau of Public Health as to whether young children are susceptible to the infection of B. typhosus. Some of the textbooks seem to regard typhoid fever in young children as a rare curiosity; others admit its possibility but emphasize its atypical aspect. I have decided that readers of Southwestern Medicine will be interested in the three age distributions given below, two being taken from recent epidemics and the third from the annual endemic incidence of typhoid in the state of Illinois.

Age Incidence of Typhoid Fever

Ages	Olean, N. Y. 1928	Salisbury, Md., 1930	Illinois 1930
0-4	11	10	9
5-9	19	15	9
10-14	31	11	11
15-19	30	9	28
20-24	30	12	18
25-29	30		8
30-34	22	9	12
35-39	18		6
40-44	15	8	7
45-49	13		7
50-54	17	3	9
55-59	4		3
60 & over	8	3	8

The Olean epidemic was water borne. The epidemic in Salisbury being a milk borne epidemic shows a higher proportion of cases in the early age groups. In neither of these epidemics have we the incidence by years for the first five years of life. In the case of Illinois the incidence is one under one year, one at one year, two at two years and five at three years of age. It is clear from each of these experiences that the child under five years old does run a risk of infection.

TYPHOID IMMUNIZATION

Dr. Dean's excellent account of the epidemic at Olean[1] gives not only the age distribution quoted above but also another age distribution showing the time lost from school as a result of inoculations with typhoid vaccine. Expressed as days lost per 100 pupils immunized the figures are as follows:

At age 4	days lost	15.6
5-9		27.0
10-14		29.3
15 & over		36.7

Taking all the 3,151 pupils together, 32.5 school days were lost and of these, 13.4 days were due to sore arms, 9.9 to headaches, 8.1 to general reactions and 1.1 to other causes. It is evident that down to the age of four years the younger the subject inoculated the less likely is there to be a resulting reaction.

For fifteen years now I have been following with interest the various essays to induce immunity by oral administration of typhoid vaccine. Fifteen years ago all my bacteriologist friends scoffed at the idea. But since then the publication in English of Besredka's work has made the method theoretically respectable, whether Besredka's theory of local immunity be ultimately acceptable or not. The results obtained, in so far as they can be measured by statistics, seem to be just as satisfactory when the vaccine is given by mouth as when it is given beneath the skin. Dr. Lloyd Arnold, Professor of Bacteriology in the University of Illinois, gives the following technic[2]: "Upon rising in the morning take two capsules followed by a glass of hot water (each capsule contains half a gram of dried bile). After thirty minutes take one cubic centimeter (1 c. c.) of typhoid vaccine in half a glass of warm water. Repeat on two succeeding mornings. Three doses altogether."

Using this method he finds that 68 per cent of those vaccinated develop a positive Widal reaction two to three weeks after oral vaccination. Chavarria and Zuloaga[3] have now published comparative charts showing qualitatively the development of specific agglutinins after subcutaneous and oral vaccination respectively. The authors recognize that the development of agglutinins is not correlated absolutely with the development of immunity. But so far as their experiments go the oral method is completely vindicated. Sceptics may borrow from us the journal containing their report and will find therein an excellent editorial discussing the subject more fully than is possible in these notes.

(1) Dean, A. S.: The Olean City Epidemic of Typhoid Fever in 1928. American Journal of Public Health 21;390 (April) 1931.

(2) Illinois Health Quarterly, October, 1930.

(3) Chavarria, A. P. and Zuloaga, R. G.: Vacunacion Antitifica por la Via Oral. Boletin de la Oficina Sanitaria Panamericana 10, 1563. (Dec.) 1931.

Southwestern Medicine

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ARIZONA STATE MEDICAL ASSOCIATION

Annual Meeting at Globe, April 21, 22 and 23

Forty years ago, in the year 1882, the Arizona Territorial Medical Association was organized in Phoenix, fostered by the Maricopa County Medical Society whose organization preceded that of the territorial society by several months.

The fortieth annual session will be held in Globe, under the auspices of the Gila County Medical Society, the dates selected being April 21, 22 and 23. The Gila County Medical Society has been hard hit by the closing of the Old Dominion hospital department, and by the exodus of several of their members. However, those left figure that they will have plenty of time to organize a good meeting and to entertain the Association in their usual hearty style. Dr. Clarence Gunter, the president-elect, with Dr. D. F. Harbridge and Dr. W. A. Holt, have organized a good program of papers. The list includes the following:

"Treatment of Spontaneous Pneumothorax," by Dr. Howell Randolph, Phoenix, Arizona.

"Statistical Report on Gall Bladder Operations at the Los Angeles General Hospital During the Past Six Years," by Dr. Harlan Shoemaker, Los Angeles.

"Urethral Methods for the Relief of Prostatic Obstructions; History and Present Status," by Dr. David M. Davis, Phoenix.

"Gas Gangrene; Its Causes and Treatment," by Dr. Hal W. Rice, Morenci, Ariz.

"The Neutrophile Leucocyte," by Dr. Harlan P. Mills, Phoenix.

"House Dust as an Etiological Factor in Asthma,' by Dr. E. A. Gatterdam, Phoenix.

"Digitalis Therapy", by Dr. W. C. Cain, Yuma, Ariz.

"Spinal Anesthesia," (illustrated by a 16 mm. motion picture film), by Dr. E. W. Adamson, Douglas, Ariz.

"Rupture of the Pregnant Uterus in Trial Labor, Previous Cesarian Scar Intact; Report of a Case," by Dr. C. E. Yount, Prescott, Ariz.

"Immunization Against Typhoid Fever," by Dr. M. S. Gaede, Jerome, Ariz.

"Injection Surgery," by Dr. N. J. Kilbourne, Los Angeles.

"Cancer of the Rectum," (with remarks upon permanent colostomy and the details of its proper care to insure the comfort of the patient) by Dr. Dudley Smith, San Francisco, Calif.

"Advances in the Diagnosis and Treatment of Sinusitis," by Dr. D. R. Gaskins, Phoenix.

"For the Good of the Arizona Medical Profession," by Dr. B. M. Berger, Phoenix.

A paper on some phase of Arthritis will be presented by Dr. Paul Holbrook, of The Desert Sanatorium, Tucson, Ariz.

A motion picture showing some operation in the specialty of urology will be presented by Dr. W. G. Shultz, of Tucson, Ariz.

"Treatment of Burns" will be the title of a paper by Dr. N. C. Bledsoe, of Tucson, Ariz.

"Cancer" will be the subject of a paper to be presented by Dr. George Ray Stevenson of San Diego, Calif.

"Problems and Management of Gall Bladder Disease," by Dr. A. P. Kimball, of Yuma, Ariz.

A paper, whose subject has not yet been given, will be read by Dr. C. A. Eaton, of Yuma, Ariz.

Mr. Burt Clingan, of the Arizona Industrial Commission, will speak to the Association on the subject of "Industrial Surgery." This is a very pertinent subject just at present.

The headquarters will be at the Dominion Hotel which has been the host of the Association so many times.

Further details of the meeting, with the complete program will be sent out by mail from the secretary's office, as this journal will not issue again before the meeting.

ARIZONA PUBLIC HEALTH ASSOCIATION

The fifth annual meeting of the Arizona Public Health Association will be held at Globe, on April 19th and 20th, the two days immediately preceding the meeting of the Arizona State Medical Association. This year various authorities prominent in the different departments of public health work have been invited to take part in the program, and a three-day short school of instruction for sanitary inspectors will be held. Everyone actively interested in public health is invited to attend the meeting.

AN ATTACK OF ETHICAL HEEBY-JEBBIES

"Resolutions passed at the Maricopa County Medical Society meeting, Sept. 14, 1908.

I. RESOLVED: That, in accordance with generally accepted medical ethics, it is the sense of this Society that we discontinue the practice of newspaper and other unprofessional advertising, such as newspaper reports of cases, and that our Secretary be requested to instruct the newspapers of this city to omit the names of our members from all reports of cases, and that we furnish said newspapers with a list of our members.

II. WHEREAS. every medical practitioner is very liable to be unjustly blamed for producing abortion and miscarriage, and

WHEREAS, it is the sense of this society that no effort should be spared to keep the name of every physician clean, therefore be it

RESOLVED: That the members of this society agree to refuse to attend a case of abortion or miscarriage without a consultant; it being understood that in case of extreme hemorrhage or other condition dangerous to life, such temporary measures shall be adopted as are necessary to maintain life until a consultant be secured.

III. WHEREAS, it is apparent that quite a number of criminal abortions have been performed in Phoenix during the past year, and

WHEREAS, such practice is contrary to the spirit of our profession and the constitution of our society; therefore, be it

RESOLVED: (1) That any member of this society who shall persist in this criminal work shall be promptly expelled from membership, and (2) that this society shall in the future do all in its power to have criminal abortionists punished by law, and (3) that the secretary be instructed to mail a copy of the resolutions to each member of the society."

The above record was found in the desk of an eminent practitioner of Phoenix, when he emptied it recently preparatory to moving into a new building. It was barely legible, written with a pen on a time-yellowed sheet which was so fragile with age that it fell to pieces in the hand. The doctor attached a brief note which said: "This gave me a good laugh and I thought it might get one from you; when you have read it, drop it in the waste basket, where these resolutions have long since gone."

This doctor and the editor came to Phoenix the same year, which was the year preceding the adoption of these resolutions. We have both been faithful members of the county society for nearly a quarter century, and are entitled to get a laugh out of the antics of the organization—if we feel so inclined. What is the answer when we look into the past and then into the present and realize that we have today just as good reason for such resolutions as we had in 1908? When we realize that we have not improved one iota in our ethical conduct in a quarter of a century? Is the answer always to remain "it is to laugh?"

We believe that a majority of the members of the Maricopa County Society, and of any other medical society WANT to practice medicine ethically, and DO practice medicine ethically. Why then do we constantly permit unethical things to be done by our members? The reason for the persistence of the practice to this day is because we placed those resolutions "on file" in 1908 and each went our individual ways, the guilty in the smug confidence that resolutions would do them no harm, and the innocent content to pass the resolutions and leave the enforcement of them to someone else.

This rotting piece of paper with its brave words is typical of the impotence of a right-thinking majority when a lawless minority chooses to defy a law. We write our words on paper; the letters fade, the paper rots, the misdeeds continue. If we wrote with one hand and seized the big stick with the other, the guilty would take cover—or reform. A dozen expulsions from many of our county medical societies, published in the newspapers, would elevate the medical profession in the eyes of the public more quickly than a year's educational talk.

"IT COSTS TOO MUCH"

This is the season when dues in medical societies must be paid. Many a check will doubtless be written with mental reservation to the effect that "there is another five dollars thrown away," or ten dollars or twenty dollars, as the case may be. We have in mind just now, as the text for this homily, the dues in the Medical and Surgical Association of the Southwest, increased two years ago from $3.00 to $5.00, and regarding which several of our members have written, "it is too much; count me out." What we

have to say, however, applies with equal force to the county and state dues and even more forcibly to the Fellowship dues in the American Medical Association.

We will frankly say, in the outset, that when we receive from any practicing physician in the southwest the avowal, "I cannot afford that" we do so with tongue in cheek. This skeptical attitude is excusable when we think of so many of the men who DO pay their dues regularly and cheerfully. In one of the four large cities of the southwest there is a general practitioner, in poor health but still trying to keep in the harness. If he puts on his books as much as $300.00 a month in charges and collects half of it he is happy. He has a family to support, but his check is invariably one of the first received when statements for medical society dues are sent out. Some months ago we asked where he went last summer for his summer vacation, and he replied: "Nowhere, I could not afford it." But his medical society dues were promptly paid for 1932 several weeks ago. We notice that his clothes are a little shabby, that his automobile is worn out, his son has left college and gone to work and his daughter in her teens is seeking work as a clerk. But his dues are paid, his head is up, he still BELONGS.

We have often heard the question, "Just what do I get for that" when dues are paid. There are return values, but they are difficult of appreciation by anyone who would seriously ask that question. We cannot say to any member, "Pay this five dollars and you will get back six dollars before the year is over." There is no such direct, immediate and tangible return for this investment, though there frequently is an indirect return. Patients are often referred from one city to another and frequently to certain physicians or surgeons known to be members of a medical society. This is not because the two doctors are fellow members of the same society, but because the fact of such membership stamps a doctor as a progressive and reliable practitioner. The treasurer's record of any medical organization is not just an account book; it is, to a certain extent, an index of character and trustworthiness.

There is a "doctor in our town" who belongs to no medical society. Recently, he sat as a visitor in a group of serious minded men and women who began to discuss the accomplishments of the medical profession, in the conquering of infectious diseases, the control of cancer, the diminishing death rate from tuberculosis, the lowering of infant mortality, the prolongation of life, and so forth. He listened for he could not conscientiously take part. He could not say, "WE have done all that", because those are the accomplishments of the organized medical profession, and he does not belong. The benefits coming to him through laws regulating medical practice, through court decisions safeguarding the practice of medicine, through enlightened public opinion regarding all doctors and their achievements, the things which permit him to walk the streets with head up and with the respect of his fellow citizens because he is a "Doctor," have come to him not through his own efforts, but because the organized profession have brought about those conditions. Every medical society has its sphere of influence, its particular objectives, its range of activities; these may be restricted or may be extensive, but every doctor within the boundary of the organization is either in it and for it, or he is out of it and against it. "Who is not for me is against me" was said by a very wise man a long time ago; he was probably not thinking of medical societies, but the saying is applicable nevertheless.

The objectives of the Medical and Surgical Association of the Southwest include the development and making available the medical and surgical facilities of the southwest as a district. Is it worth five dollars to any doctor in the southwest to BELONG to that project? All of us spend larger sums than this for things of lesser value.

The majority of doctors do not drink, but we hesitate to estimate what some of us waste on bootleg liquor; one-half the allowance in many a doctor's budget for illicit drinking would buy him a life membership in a half dozen medical societies, and if so used would be a better insurance that he would live long enough to enjoy their benefits. We know of doctors who quit drinking because of fear of cirrhosis of the liver, others who were afraid of wood alcohol poisoning, and in exceedingly rare instances one has quit because he respects the Constitution of the United States, but never have we heard of one who shuns the boot-legger because "it costs too much," in money.

A golfing doctor might carry his own clubs two afternoons and the caddie fees would be the difference between the old dues and the new dues in the Southwest organization. We know of doctors who grew tired of the doldrums between 100 and 120 strokes and quit because they could not "break a hundred." We know a few who got too busy with other affairs and gave up golf, but we have yet to see the medico who dropped the game because "it costs too much."

A doctor who takes his enjoyment auto

driving about the countryside on Sunday afternoons, could stay at home just one time and save enough on that one hundred mile jaunt to pay this difference in dues. We know of some doctors who are too lazy to drive out with their families, others who let the wife have the car while they hie away to the golf course, and a few who just do not like to drive, but the fellow who just stays at home on a bright sunshiny afternoon, because "it costs too much" for gasoline and tires is a rara avis indeed.

Lastly, while we do not smoke, we understand that some of the popular brands of cigarettes cost as much as ten cents a package. ONE package a day, a very small sacrifice for any smoker, would pay his dues in the Maricopa County Medical Society, the Arizona State Medical Association, the Medical & Surgical Association of the Southwest, his Fellowship dues in the American Medical Association, and leave $6.50 over for a subscription to some other first class medical journal. We would like to have the name of the doctor who stopped smoking, or even cut down on his expenditures for this pleasure, because "it costs too much."

What is the worth of the medical society? The consciousness of a fraternity of interests,, the immeasurable influence of united thought, the intangible worth which comes from a community of effort along certain lines, values which cannot be analyzed in words but are none the less real, these are the quid pro quo of medical society membership. To any member who cannot sense the value to him of society membership and who considers dropping that membership, we wish to say that whatever it may cost you to stay in, "it costs too much" to drop out.

AMERICAN COLLEGE OF PHYSICIANS TO AWARD PRIZE TO DR. O. T. AVERY

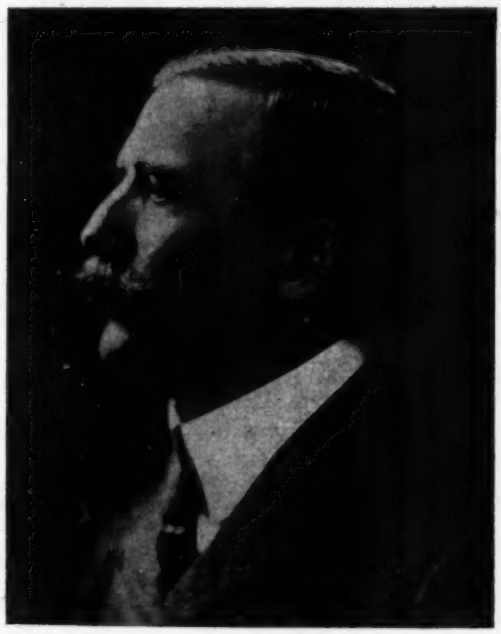
The American College of Physicians recently selected Dr. O. T. Avery of the Hospital of the Rockefeller Institute of New York City as the recipient of the John Phillips Memorial Prize for 1932.

This prize, an annual award by the College in the sum of $1500.00, is given to perpetuate in the College the memory of Dr. John Phillips of Cleveland, a man of outstanding accomplishments as investigator, teacher and physician, for many years a member of the Board of Regents of the American College of Physicians, who gave his life in saving others on the occasion of the Cleveland Clinic disaster on May 15, 1929.

The Committee on the John Phillips Memorial Prize, through its chairman, Dr. James H. Means of Boston, recommends the award, "To Dr. O. T. Avery for the series of studies upon the Pneumococcus in which he has played a leading role, beginning with the discovery of the type-specific soluble capsular polysaccharides and culminating in the discovery of o bacterium producing an enzyme which splits the polysaccharides of Type 3 Pneumococcus in vitro, thus rendering it susceptible to phagocytosis and thereby protecting the animals infected with it."

The Sixteenth Annual Clinical Session of the College will be held in San Francisco during the week of April 4, 1932. Dr. Avery will deliver an address, "The Role of Specific Carbohydrates in Pneumococcus Infection and Immunity", at the Convocation on Wednesday evening, April 6. At the conclusion of Dr. Avery's address, the prize will be presented to him by Dr. S. Marx White of Minneapolis, President of the College.

The distinction of this award is enhanced by the fact that although it was available the previous year, it was not possible to decide on a suitable recipient. This is, therefore, the first award made. It is the hope of the officers and members of the College that this annual prize in memory of a distinguished colleague may, by recognizing merit, be a continuing stimulus to investigators in those subjects having a direct bearing on the advancement of Clinical Science.



DR. HENRY S. WELLCOME

Many friends and associates of Dr. Henry S. Wellcome in the United States will be gratified to learn that knighthood was conferred on him in King George's New Year honor list in recognition of his generous support of medical research.

Dr. Wellcome is the head of Burroughs Wellcome & Co., London, manufacturers of fine chemicals and galenicals, with establishments in the United States, Italy, Canada, Australia, India, China, and other countries.

It is interesting to note that Dr. Wellcome is a native of Wisconsin and became a British subject by naturalization.

He was graduated at the Philadelphia College of Pharmacy and Science, and from the beginning of his career Dr. Wellcome made original scientific research and strictly ethical methods the foundation of his life's work.

Dr. Wellcome's American interests are wide and varied. He is a Director of the Gorgas Memorial Institute of Tropical and Preventive Medicine, Washington, which operates scientific laboratories at Panama for research work touching causes and prevention of tropical diseases.

Dr. Wellcome is a life member of the American Pharmaceutical Association and has taken an active interest in its scientific work since the beginning of his membership in 1875. During the past several years Dr. Wellcome has taken an active interest in the campaign for the establishment of a national headquarters building for the Association in Washington to be known as the "American Institute of Pharmacy". Dr. Wellcome's interest in this project has been evidenced by words and deeds. At the last annual meeting of the Association held in Miami, Florida, during July 1931, Dr. Wellcome was elected Honorary President of the American Pharmaceutical Association.

The childhood of Dr. Wellcome was spent in a frontier settlement of Minnesota, and here his interest had its inception in archaeological subjects and this has continued to develop and find expression in some of Dr. Wellcome's larger undertakings, which are well known to Archaeologists.

As a result of his early contacts on the frontiers of civilization Dr. Wellcome came to know the American Indian. For a great many years Dr. Wellcome has taken a personal interest in the welfare of a tribe of Indians in Alaska. In 1887 he published a work of some 500 pages on these Indians under the title of "The Story of Matlakahtla" which relates how this tribe of savages was transformed into peaceful, industrious dwellers and tillers of the soil through education and the adoption of Christianity.

Dr. Wellcome has received world-wide recognition for his great service to science and medicine, for his interest in missionary enterprises, and for his personal work in medical research, the history of medicine, and for his archaeological and ethnological explorations and studies.

HEART SYMPTOMS IN A SYPHILITIC

(Continued from page 131)

and also heard down the left border of the sternum to the third left interspace. There was definite pulsation and thrill in the second right interspace and a thrill in the suprasternal notch. Rate 85. Action regular. Pulses synchronous, not paradoxical. Artery walls too thickened to make out Corrigan quality. Blood pressure 180/80 to 140/70. An electrocardiogram January 28 showed normal rhythm, rate 80, P-R interval .22 seconds, marked left axis deviation, probable intraventricular block. Another March 5 showed auricular fibrillation, rate 100, ectopic ventricular contraction (lead I), intraventricular block as before. Coarse moist rales at the bases of both lungs. At the left base posteriorly dullness, diminished tactile fremitus, normal voice and breath sounds. In the abdomen a small amount of free fluid. In the left inguinal region a remarkable mass of greatly dilated veins, the result of trauma. Pitting edema of the legs and sacrum. Pupils equal, regular, reacted promptly to light and accommodation. Bilateral cataracts. Knee-jerks and ankle-jerks not obtained.

Urine normal in amount, specific gravity 1.017 to 1.031, the slightest possible trace to a trace of albumin at 22 of 31 examinations, sediment negative until March 18, then 1 to 30 leucocytes at 5 of 6 examinations, 1 or 2 red cells twice. Culture from a catheter specimen March 22 showed no growth. Renal function February 4, 10 per cent., February 12, 40 per cent. Blood: 8,650 to 15,700 leucocytes, hemoglobin 70 to 90 per cent., polynuclears 87 per cent., reds normal. Three Wassermanns negative, one strongly positive. Non-protein nitrogen 43 to 56 milligrams. Stools, guaiac negative three times, strongly positive once after epistaxis.

A portable x-ray showed the mediastinal shadow increased in width, chiefly to the right. The increase was somewhat exaggerated by rotation of the patient. There was also some evidence of tortuosity of the aorta. It was thought the appearance should be checked by fluoroscopic observation.

Temperature 98° to 100.05° with two periods of greater elevation, as high as 101.5° February 3 to 7 and March 16 to 19. Radial pulse 55 to 125. Pulse deficit 4 to 90 beats. Respirations 16 to 47.

The patient was psychotic at night and silent by day, went downhill steadily, and by the end of the first week was psychotic day and night. During the week ending February 17 he made some improvement, had much less dyspnea, and lost the signs of congestive failure. He continued to gain, and by March 2 was considered ready to go out as soon as arrangements could be made for a place for him.

March 4 he developed Cheyne-Stokes' respiration and fibrillation with an apex rate of 120 and radial of 116. There was a pericardial friction rub. The next day he was in much the same condition he was in a month earlier, querulous, psychotic and extremely short of breath. The heart was fibrillating, rate 110. No rub was heard. The bases of the lungs were very edematous. The Cheyne-Stokes' respiration continued until March 6. By the 11th the heart condition had quieted down but the patient was extremely dyspneic and constantly psychotic. March 17 his legs and genitals were enormously swollen and he looked moribund. He made a little improvement for a day or two, but soon was worse than ever. For the next month he seemed about to die at anytime. Massive edema extended to the upper extremities. April 17 he died.

Discussion by Dr. Hamer

In this case, there should be no difficulty in making a diagnosis of syphilitic disease of the aortic valves and aorta. It would seem that our problem is one of ascertaining if any other disease process is present in the heart of this patient, besides syphilis.

The past history on this case indicates to us the two outstanding symptoms for which relief is sought in syphilitic heart and aortic disease; namely, paroxysmal dyspnea, and substernal oppression, one or both of which are highly suggestive, especially of syphilitic aortitis, and especially if these occur without other evidence of cardiac insufficiency. That history dated back some years ago, but, at the present time, we have a patient with a definite cardiac breakdown, and with definite evidence of failing circulation. The question, as stated before, is whether this patient has only syphilis or some other process.

A diagnosis of syphilitic aortitis with aneurysm formation, and aortic regurgitation can be made in this case. The history alone would warrant a diagnosis. Simple or uncomplicated aortitis sometimes is not sufficiently well defined to make a diagnosis, but when we have the presence of syphilitic aortitis, the diagnosis is usually easy. Aortic insufficiency is always highly suggestive of syphilis until proved otherwise.

Rheumatic fever is the most important etiological factor to consider in differentiating from syphilitic lesions. Usually syphilis and rheumatic fever are clear-cut entities. A case of aortic insufficiency, if combined with a mitral lesion, giving a definite rheumatic history, and no evidence of syphilis, should be and is rheumatic infection; while a case of aortitis, with an associated aortic insufficiency,

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having positive historical, physical, and serological evidence of syphilis, and no rheumatic history, should be syphilitic aortitis and valvulitis. Such it is with this case, and other well-known facts help us to make the diagnosis, such as that aortic insufficiency due to lues exceeds all other causes combined, a prolonged latent period before a serious onset in contrast to early appearance of cardiac signs of rheumatism, the age of the patient is more in line with a case of syphilis; in rheumatism, the signs of trouble are usually those of simple cardiac insufficiency, while in lues the symptoms of substernal oppression and intermittent dyspnea are more common. Also, aortic dilatation is practically a regular accompaniment of lues, and not of rheumatic fever.

There are also other physical findings of lues here, such as a perforated nasal septum, a high pulse pressure, widening of the aortic region, a thrill, diastolic shock over the aortic region, hypertrophy of the heart, and also an edema, moisture in the lungs, and cyanosis, which, however, would indicate cardiac and circulatory failure from any cause.

It would seem that the signs over the mitral area are interesting for speculation. Have we a definite mitral lesion here too, or are the findings simply an expression of the expansion of the aortic murmurs? It would be very difficult to say, but my guess would be that what is heard over the apex is an Austin-Flint murmur—a phenomenon very difficult to diagnose. Lues itself rarely attacks the mitral valve, but in luetic aortic insufficiency one hears at times a presystolic murmur which at autopsy shows itself to be a true Flint murmur. Again, with hypertrophy and dilatation of the heart, incident to an aortic insufficiency, there can occur a relative mitral leak due to the stretching process.

Another problem in diagnosis would be an atheroma of the aorta, atheromatous valve changes and hypertension. It is possible that this might be combined with lues, and at the age of this patient could be possible. But here our blood pressure is not one of hypertension, the diastolic is too low, although we must remember that this patient's heart is not functioning very well. The blood pressure here is more consistent with a Corrigan-like pulse, with a large pulse pressure. We have not sufficient evidence here to make a diagnosis of arteriosclerosis. Hypertension and atheroma, while not a part of the usual picture of luetic aortitis, occur, as a rule, later in life to this extent, and when present do not usually give us the picture of paroxysmal dyspnea, substernal oppression of the nature indicated, or the characteristic type of valve sounds heard here.

The question of an intrathoracic tumor might be raised, but it is unnecessary to mention in detail all of these. Tumor symptoms are largely those of pressure, and these pressure symptoms may be the same as those of aneurysm, but in these cases the other symptoms of aortitis and valvulitis are usually absent.

My diagnosis on this case would be hypertrophy and dilatation of the heart, syphilitic aortitis with aneurysm of the ascending aorta, and aortic insufficiency, syphilitic stenosis of coronary arteries, chronic passive congestion of the organs, anasarca, and probably arteriosclerosis.

Discussion by Dr. Ketcherside

This patient, when first seen, seven years before admission, at the age of 50, already had a well-developed aortic lesion with enlargement of heart and great vessels. Most aortic insufficiencies, particularly before the age of 50, are caused by syphilis and, since this man gave a history of syphilis 20 years ago, we are safe in assuming that he had a syphilitis aortitis, with aortic insufficiency and aortic stenosis.

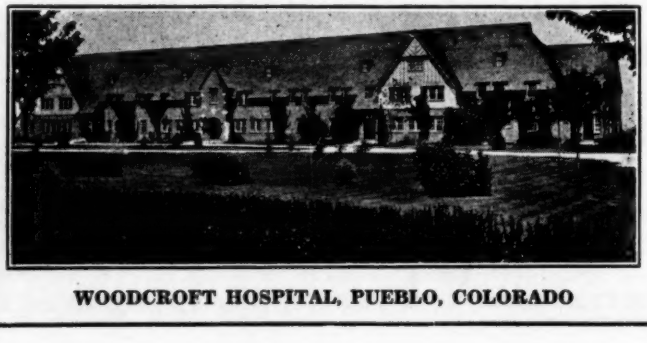
On admission he stated that nine months previously his dyspnea became worse, with a sense of severe pressure over the heart and lower chest on excertion. After three weeks rest he was able to resume work with little trouble except for dyspnea and pain, until two weeks before admission, when he became too weak and dyspneic to work.

Examination on admission showed among other things, pulsation on both sides of neck. The whole precordium heaved, supracardiac dullness in the second space 6 cm. to the left and 3 to the right. There was a definite pulsation and thrill in the second right interspace and a thrill at the suprasternal notch. From all these evidences I should say that he had developed an aneurysm of the ascending aorta. He showed many evidences of failing heart muscle and later developed a precordial friction rub which was probably from pericarditis.

Diagnosis: syphilitic aortitis with aortic insufficiency and stenosis; aneurysm of ascending aorta, myocarditis, pericarditis, arteriosclerosis, nephritis.

Syphilis is primarily a disease of the blood vessels so we should expect to find a high incidence of heart disease in syphilitics. Over 75 per cent of all aortic insufficiencies occur in syphilitics. Aortitis occurs in at least half of the cases of late-acquired syphilis. The lesion usually develops between the ages of 40 and 50. Myocardial and pericardial changes are very common. Heart block is also very common from syphilitic changes in the bundle of His. In patients who must continue work for a living, the prognosis is bad, even if proper antisyphilitic treatment is given.

Founded 1896 by Dr. Hubert Work



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Superintendent

Differential Diagnosis by Dr. Cabot

He certainly died of congestive failure in heart disease. If one were making out the death certificate one certainly could say as much as that. But I want to discuss the question, did he die of syphilitic or of rheumatic heart disease? I think it makes some difference, especially to those coming after.

Let us take the question of aneurysm first. If he had syphilis he had aneurysm in all probability, although it is possible to have syphilis without aneurysm. Has he had pain characteristic of aneurysm? I should not say so. He has had pain, but that pain could be explained either by aneurysm or otherwise. He did not seem to have it in the hospital. There was definite pulsation and thrill in the second right interspace. I do not see how we can help saying that is aneurysm. I do not see what else would give definite pulsation and thrill at that point. He could have thrill but not pulsation in the second right interspace from anything else that I can think of. It is too high for the auricles, too low for the great vessels. Everything else goes with a syphilitic heart and aortic regurgitation, except that I should expect an even greater pulse pressure. The pulse pressure is not so great as I should expect with a syphilitic heart. The dyspnea dates back seven years. That is a good point. If he had heart trouble for seven years it probably was not syphilitic.

Those murmurs in the early part of the history could be accounted for by a rheumatic lesion with stenosis and regurgitation, or by a syphilitic lesion with regurgitation only and an aneurysm to cause the pulsation. So far as the murmurs are concerned either will do, rheumatism or syphilis. I am really equally balanced myself. The pulsation however looks like aneurysm, and if aneurysm syphilis. I think there is a little to favor that, and so I am going to say syphilitic aortitis with aortic regurgitation and aneurysm, hypertrophy and dilatation of the heart, chronic passive congestion, and that is all.

DR. CABOT'S DIAGNOSIS

Syphilitic aortitis with aortic regurgitation.
Aneurysm.
Hypertrophy and dilatation of the heart.
Arteriosclerosis.
Chronic passive congestion.

Pathological Discussion by Dr. Mallory

1. Primary fatal lesion

Arteriosclerotic heart disease—aortic stenosis and insufficiency.

2. Secondary or terminal lesions

Hypertrophy and dilatation of the heart.
Chronic passive congestion.
Arteriosclerosis of the aorta.

3. Historical landmarks

Aneurysm of left iliac artery.
Left inguinal varices.

The man did have an aneurysm, but it was not in the place where it was suspected. It was in the left iliac artery. The aorta was rather dilated, but not beyond the extent to which we very commonly see it dilated in elderly persons with arteriosclerosis. The heart was perfectly enormous, weighing 925 grams, almost a kilogram. The left ventricle wall was thirty millimeters thick. The valves were negative except for the aortic, which was tremendously thickened, with irregular, rough, calcified masses; so that there was no elasticity of the ring at all, and there must have been a considerable degree of stenosis and regurgitation. There was nothing in the aorta itself that we could definitely say was syphilis.

This aneurysm in the left iliac artery may possibly have been syphilitic in origin, may also possibly have been traumatic, connected with the injury which is said to have caused his varicocele there. Sections showed no positive evidence of syphilis.

Heartily agreed

. . . but what if they refuse to drink milk?

A CERTAIN State Department of Public Health is greatly exercised over the fact that malnutrition among children seems to be *on the increase.*

In the state referred to, many localities are furnishing the school children hot soup at noon. This explains the outburst of the Health Commissioner quoted above. He ends by saying: "Soup has its place . . . but let's give our growing children milk, and lots of it."

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There was no tuberculosis of the lungs. The other organs showed only chronic passive congestion and a very slight degree of arteriosclerotic nephritis, not enough to cause any symptoms.

PROPAGANDA FOR REFORM

Administration of Suprarenal Cortical Extracts. The efficacy of replacement therapy in cases of Addison's disease by the injection of suitably prepared extracts of the suprarenal cortex, freed as far as possible from the epinephrine liberated by the medulla of the gland, has apparently been established. For patients that tolerate intramuscular injection well, this is perhaps the preferrable method of administration. The intravenous method is indicated when the patient is in crisis and an immediate response is necessary. The possibility of effective oral administration has recently been reported on. In cases in which prolonged treatment is demanded, the oral route may be of preferential utility. (Jour. A. M. A., January 2, 1932, p. 52.)

"Infra-Red".—Under the incorrect and confusing name "Infra-Red" the Iodine Products Co. of Caney, Kansas, describes an office test to determine the degree of acidosis. The designation "Infra-Red" is applied to a "super-alkalized iodide." This test can do no more than determine the titratable acidity of the urine. However, this is not the method of choice in measuring the development of an acidosis. (Jour. A. M. A., January 2, 1932,p . 71).

Nucleotide K 96.—The Council on Pharmacy and Chemistry in preliminary report on Nucleotide K 96 reports that Jackson and his collaborators reported their clinical results in the treatment of twenty cases of profound leukopenia by intravenous injection of unbroken pentose nucleotides, stating that fourteen patients recovered but that no conclusions can be drawn as to the efficiency of the material until a much larger series of cases has been adequately treated. The product used was prepared by the Smith, Kline & French Laboratories. The firm requested consideration of the product by the Council under the name Nucleotide K 96, stating it to be a mixture of the sodium salts of the pentose nucleotides derived from nucleic acid. The designation "K 96" was used because this was the number of the preparation decided to be the most effective or most appropriate for intramuscular use, and the present product may be replaced by a more acceptable one. The Council deprecates the use of numbers in connection with names and believes that unless a series of similar preparations are to be released by Dr. Jackson that it will be better to use some such acceptable name as "pentnucleotide". The Council believes that pentose nucleotides or some similar preparation holds promise of instituting a new era in the treatment of a rare and usually fatal syndrome, but that the preparation now under consideration is not ready for general use by the medical profession. The Council held the product not to be eligible for New and Nonofficial Remedies at this time but, since the experimental evidence is adequate and the composition of the product sufficiently controlled, the Council issued this preliminary report on the product. (Jour. A. M. A., January 9, 1932, p. 142).

Carbarsone.—The Council on Pharmacy and Chemistry reports that Carbarsone, according to the reports of Dr. C. D. Leake and his collaborators, who have been conducting preliminary trials of the amebacidal value of the product, is p-carbaminophenyl arsonic acid, and that the firm of Eli Lilly & Co. has collaborated with Leake in the production of the product and has agreed to undertake its manufacture. The Council reports that the evidence

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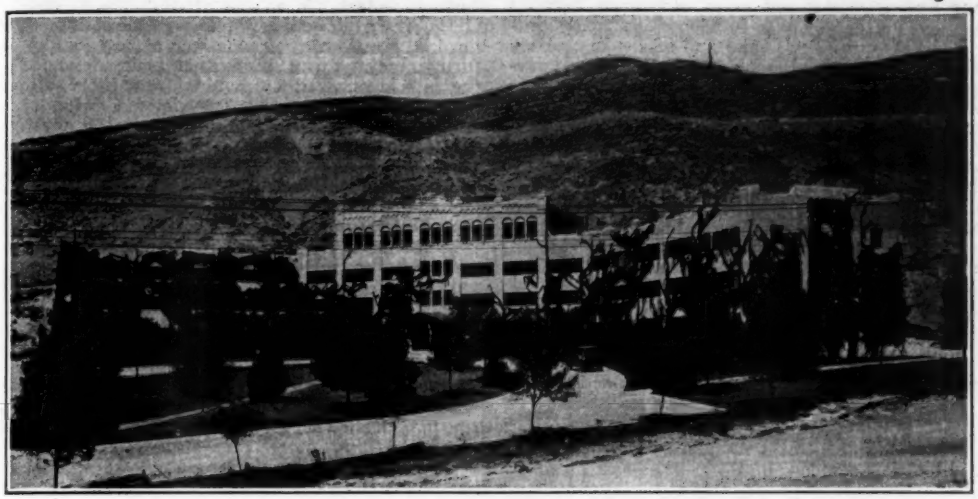

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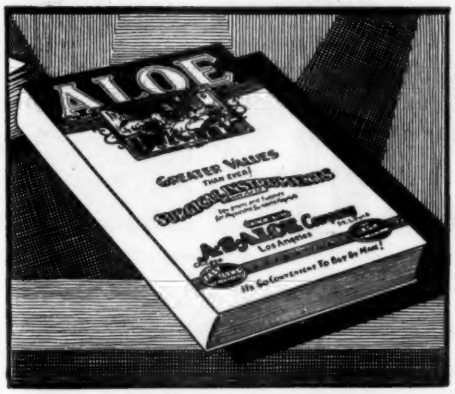

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appears adequate to show the chemical composition of the product used and gives assurance that its purity and uniformity will be adequately safeguarded. The papers of Dr. Leake and of Leake and his collaborators present evidence to show that compared with other amebacides, Carbarsone seems to be effective; but the recurrences noted in monkeys after treatment, suggest that a similar experience may be had in man, and that the clinical evidence as a whole is promising. The Council agrees with Leake and his collaborators that more clinical evidence of a confirmatory nature is desirable and has postponed consideration of Carbarsone for inclusion in New and Nonofficial Remedies to await the development of further clinical evidence of its value. (Jour. A. M. A., January 16, 1932, p. 230).

Average Optimum Dosage of Cod Liver Oil.—The Council on Pharmacy and Chemistry reports that at present the recommended dosages of cod liver oil differ widely. In part, the varying effects that have been reported may no doubt be explained by the unlike activity of different brands of cod liver oil. Thus, while the U. S. Pharmacopeia permits the claim that the product is biologically standardized if it contains 50 vitamin A units per gram as determined by the method given, certain brands now in New and Nonofficial Remedies guarantee a potency of 1,000 U. S. P. vitamin A units per gram, and none contains less than 500 units. The vitamin D potency of cod liver oil is probably still more uncertain, since no official method of assay has been adopted; hence it is most difficult to compare different brands of cod liver oil even if the vitamin D potency and method of assay are declared. In view of the foregoing situation, the Council referee in charge of cod liver oil and cod liver oil preparations believed that some effort should be made to ascertain the amount of cod liver oil that must be administered under ordinary conditions to obtain the effects attributable to cod liver oil. With a view to obtaining an expression in regard to the dosage of cod liver oil, an inquiry was formulated and sent to nineteen pediatricians. From the replies received it was noted that little reference is made to the possible physiologic value of the vitamin A of cod liver oil, and that the consideration of dosage is expressed wholly in relation to the vitamin D content, or in terms of its effects in overcoming the relatively obvious physical manifestations of rickets. In all the opinions cited, the authors apparently recognize the added value of vitamin A and prescribe cod liver oil in preference to plain viosterol. Viosterol is favored, however, but only as a supplement, such as cod liver oil with viosterol 10 D. Most of the pediatricians quoted seem to agree on a dosage of 3 teaspoonfuls daily as amply sufficient to prevent and cure clinically evident rickets. In contrast to the practice of physicians in former years, most of the pediatricians begin the administration of cod liver oil at a time when the growth begins to accelerate—if not within two weeks, then at least before the end of the first month—reaching the maximum dosage usually during the third and rarely later than the fourth month, thus usually aborting the rickets in its earliest incipience and hence obviating the use of large doses later. There appears to be general agreement that it is only during these first two or three months of most rapid growth that the child requires its maximum dosage of cod liver oil, which may be continued as an ample dosage on up to 2 years of age. The Council has decided that a dosage of 3 teaspoonfuls (12 cc.; 3 fluidrachms) daily, may tentatively be set as the standard optimum dosage of cod liver oil for the average infant at 3 months of age. (Jour. A. M. A., January 23, 1932, p. 316).

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WRITE FOR LITERATURE

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Electrovita.—"Electrovita" is said to be manufactured by the Electrovita Company, Inc., of Norwalk, Ohio, which has for its general distributors the Electrovita Sales Company of the same city. According to the label, Electrovita is an "artificial mineral water." The claims on the trade package are mild and conservative as becomes statements that come under the National Food and Drugs Act which prohibits fraudulent claims on trade packages. But the trend of such advertising as is NOT on the trade package and therefore not subject to the Federal law, is to make the public believe that this city tap water, that has been subjected to electrolysis, has taken on some esoteric qualities that changes it from ordinary hydrant water into a veritable catholicon—a panacea for whatever may ail you. Both the printed leaflets and the Sales Manual declare that the exploiters of Electrovita do not recognize specific disease or promise a specific cure but the Sales Manual contains references to specific conditions, such as, cancer, arthritis, syphilis, female trouble, venereal disease, etc. From an examination of Electrovita in the A. M. A. Chemical Laboratory it may be calculated that the product consists essentially of 0.068 Gm. of calcium hydroxide in 100 cc., with a very small amount of calcium sulphate. This is equivalent to approximately 49 per cent of the strength of lime water U. S. P. It would be difficult for the Electrovita people to persuade the public that they have the marvelous panacea that they claim, if they admitted that their preparation was merely ordinary, official lime water, half-strength. (Jour. A. M. A., January 23, 1932, p. 337).

Thallium Poisoning.—The dangers of poisoning by thallium has been reported on. Its use as a rodent poison originated in Germany about 1920. Later the remedy was introduced as a depilatory to be applied either locally as a cream or to be taken internally. During the past year or so medical literature has contained reports of severe poisoning following the use of a proprietary depilatory cream called Koremlu, which had for its active ingredient thallium acetate. In its action, thallium seems definitely to select nervous tissue. There is apparently no known certain antidote to the action of thallium. It is a cumulative poison of high toxicity, without taste, smell or other warning properties. (Jour. A. M. A., January 30, 1932, p. 406).

Institute of Western Research.—The Institute of Western Research, claiming to have offices in Los Angeles and San Francisco, is issuing, or has issued, pieces of publicity for products and persons of a medicinal and medical character. Among the booklets issued by the Institute of Western Research have been one dealing with the activities of the University of Southern California, one on Dr. W. E. Balsinger, "plastic surgeon", another on the College of Osteopathic Physicians and Surgeons, one on "Terpezone" and one on "Tarzana Mineral Water". Terpezone was the subject of an unfavorable report by the Council on Pharmacy and Chemistry. (Jour. A. M. A., January 30, 1932, p. 418).

Pantopon-Roche Omitted from N. N. R.—Pantopon-Roche (Pantopium Hydrochloricum), marketed by Hoffmann-La Roche, Inc., is a mixture of the hydrochlorides of the alkaloids of opium containing 50 per cent of anhydrous morphine hydrochloride. The Council on Pharmacy and Chemistry reports that it was accepted for New and Nonofficial Remedies in 1915 and that, in accepting the product and repeatedly thereafter, the Council has insisted that the firm avoid in its advertising any claim that Pantopon-Roche is possessed of essential properties lacking in morphine. The Council was obligated, however, to remind the firm that its advertising should not contain this claim either directly or by

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SUMMER sun is an effective antirachitic agent but the physician cannot always depend on it, so he usually prescribes cod liver oil.

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For infants deprived of breast milk, S. M. A. is a close adaptation to breast milk, with the advantage that it contains enough biologically tested cod liver oil to prevent rickets and spasmophilia and the additional advantage that this cod liver oil is uniformly distributed in each feeding and is properly emulsified for easy assimilation.

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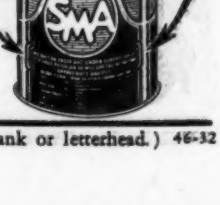
S.M.A. is a food for infants—derived from tuberculin tested cows' milk, the fat of which is replaced by animal and vegetable fats including biologically tested cod liver oil; with the addition of milk sugar, potassium chloride and salts; altogether forming an antirachitic food. When diluted according to directions, it is essentially similar to human milk in percentages of protein, fat, carbohydrates and ash, in chemical constants of the fat and in physical properties.

Ethical? Certainly

No directions are given to the laity and in addition from the very beginning every package of S. M. A. has borne this bold statement: "Use only on order and under supervision of a licensed physician. He will give you instructions".



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(Attach to your prescription blank or letterhead.) 46-32

inference; and the firm repeatedly signified willingness to abide by this condition. Recently a circular letter of Hoffmann-La Roche, Ind., was forwarded to the Council by a physician. The intent of this letter to indicate that the action of Pantopon-Roche is essentially different from that of morphine was plain. Furthermore, the letter failed to appraise the physician of the identity of the product, namely, that it is a mixture of the hydrochlorides of opium alkaloids. The Council concluded that Hoffmann-La Roche, Inc. could not be depended on to market Pantopon-Roche with claims which make it acceptable for New and Nonofficial Remedies and therefore rescinded the acceptance of the product. (Jour. A. M. A., October 3, 1931, p. 1001).

Pernocton Not Acceptable for N. N. R.—Pernocton, stated to be a 10 per cent solution of the sodium salt of the secondary butyl-beta-bromallyl barbituric acid, was submitted to the Council on Pharmacy and Chemistry by Riedel-de Haen, Inc. The product is proposed for intravenous injection for production of "Pernocton sleep". Since the name is therapeutically suggestive, the firm proposed to replace it with "Pernoston" and requested consideration under the latter name; however advertising as late as May, 1931, still bears the name Pernocton. The Council on Pharmacy and Chemistry declared the name Pernocton therapeutically suggestive and held the product, whether marketed as Pernocton or Pernoston, unacceptable for New and Nonofficial Remedies for lack of critical evidence that routine intravenous injection of potent narcotics is desirable or safe. (Jour. A. M. A., October 3, 1931, p. 1001).

The A. M. A. Chemical Laboratory.—The A. M. A. Chemical Laboratory cannot analyze specimens for individuals. 1. The chemical work undertaken by the Laboratory must be of general interest to physicians. 2. The Laboratory is busily engaged in the work for which it was founded, namely, investigations of the newer remedies for the Council on Pharmacy and Chemistry. 3. The Laboratory undertakes examination only of products in original containers, bearing original labels and the source of which can be vouched for in case of possible court action. 4. The present Laboratory would need much enlargement and a far larger staff to examine specimens for all of the one hundred thousand physicians it is designed to serve. (Jour. A. M. A., October 3, 1931,p. 1001).

THE HISTORY OF HEMOSTASIS, by Samuel Clark Harvey, M. D.; Professor of Surgery, Yale University; Surgeon in Chief, New Haven Hospital. With 19 illustrations; Paul B. Hoeber, Inc., New York, 1929.

This is a short essay on a most interesting historical subject of surgery.

The Egyptians used astringents of heavy metals and often cold, compression, hot oil and elevation of the part.

The Chinese made use of styptics and bandages. As would be expected, when it is not recognized that blood was carried within blood vessels, there was no accurate method for the control of hemorrhage. Now and again the ancient cautery was used.

Celsus, in the early Christian period, probably first applied a ligature, although it was never used except as a last resort—styptics and compression being used first.

Archigenes, about 100 A. D., suggested the sewing of blood vessels, although he probably never actually ligated a vessel as we know it today.

Rufus of Ephesus recommended digital pressure, pressure with bandages, cold, astringents, torsion and ligature.

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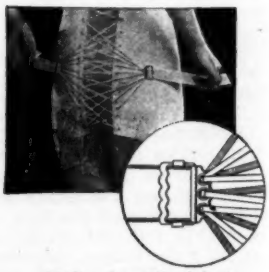

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Galen seemed to make use of all that had been recommended before him for the purpose of staying bleeding. He recmomended also that a finger be placed over the vessel until a clot formed; in the wounds he used roasted rosin, fine flour, gypsum, and so forth. He also recommended the use of ligature or Celtic linen, for arteries. After Galen, came the black night of the middle ages of ignorance and superstition, and all progress was stayed for many centuries. Surgery in the meantime was divorced from medicine and the men did little but quote the sayings of the ancients and use the cautery in place of the knife. This was "refined in its cruelty and explicit in its application." Authority for this was from Hippocrates and Galen. Hippocrates had said that, "what the medicament quelleth not, the iron doth; and that which the iron amendeth not, the fire extermineth." As any one could apply the cautery and no one the ligature, it resolved itself into the treatment of wounds, and little else was done.

Hugh Lucca and Theodoric used both the suture and the ligature in hemorrhage.

Lanfranc, the father of French surgery, used styptics, compression, torsion and the ligature, although in the main he was a cauterist.

Henri de Mondeville felt that "God did not exhaust all the creative power in making Galen," and introduced again styptics, compression, ligation and acupressure.

Leonardo Bertopaglia drew the vessel forward with a steel hook, isolated it, and tied it with a flaxen thread. He often used softened catgut, which previously had been recommended by Rhazes.

Paré began his surgery by cauterization of the wounds, either by hot oil or by the use of the actual cautery. With a lack of hot oil on one occasion he used other agencies and discovered that healing was better and less painful than with cauterization.

After some fifteen years the idea percolated to the surface that cauterization might not be necessary. Paré amputated a leg, using only the ligature; the man made recovery. Paré said: "I dressed him and God healed him. The man returned home gaily with a wooden leg saying that he had got off cheaply without being miserably burned to stop the bleeding." Sometime later Paré used a pinching instrument, one originally used for grasping bullets, for the purpose of grasping bleeding vessels. This became the artery forceps.

Fallopius thanked God for audacity sufficient to use the ligature for hemorrhage but he still used the cauteary for amputation. There was a great deal of criticism of Paré and a great tendency to use the ligature without giving him credit.

In some unknown way and by some unknown person it was found that pressure to the main trunk of the blood vessel sometimes stopped hemorrhage in the main wound.

Morel applied a bandage and twisted it with a stick. This was in 1664. This became the tourniquet of all later times, and was so sensible and so efficacious that there has never been any serious opposition to its use.

Petit in 1731 came to the definite conclusion that coagulation within a blood vessel was the sensible thing to stop hemorrhage. He recognized that the rupture of the coats was necessary in producing the clot. A study as to what became of the ligature was also begun. Sepsis was the rule, and sloughing was almost invariably the cause of secondary hemorrhage.

Physick, the father of American surgery, in 1806 recommneded and used twisted buckskin in the form of a thread, as a ligature.

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It was at the suggestion of Von Graefe, the elder, that the first instrument which might be called an artery forceps was made. Physick also had a crude artery clamp. Crude clamps then came into more or less general use.

Halsted was impressed in 1881, at the time he visited Germany, that surgeons were badly in need of hand artery forceps. He set to work and developed what is almost the modern artery forceps.

Spencer Wells developed a smilar clamp about this time. One or two artery clamps was all that any surgeon possessed. Few hospitals in New York had as many as six in 1880, although Mikulicz, in Billrith's clinic in Vienna, in 1889, used as many as a dozen clamps or more.

Lister, in attempting to obtian early and complete healing of the wound, found that unabsorbable ligatures were definite impediments. He began experimenting with various agencies to use as ligatures. He made a study of arteries which had been ligated. After a time he came to the conclusion that silk must be discarded. He came to the use of animal ligatures and catgut. Ultimately, he decided upon what is commonly known as catgut as being the only absorbable material. Since that time there has been a great deal of work done toward perfecting and preparing it for use. Catgut has long been known. An instrument was found in Rameses' tomb strung with catgut, which, after 3000 years, gave forth a musical note—perhaps the same note that charmed the ear of the great Pharaoh. The Indians used gut for their bows and it has been used in many other instances.

This is a well-written, entertaining, historical review of hemostasis. O. H. B.

THE TREATMENT OF DIABETES MELLITUS WITH HIGHER CARBOHYDRATE DIETS, by William David Sansum, M. D.; Harper and Brothers, Publishers.

This excellent treatise on diabetes gives the physician and his patient an easily understood outline of the normal diet requirements, the cause of the disease, its manifestations, the objectives and the routine procedure of treatment. The necessary laboratory procedures are explained, and the theory, use, and effect of insulin are clearly outlined. One chapter is devoted to complications of diabetes and their treatment.

The second section of the book is concerned with diet. With it, the physician can readily prepare a diet of any caloric requirement or any variation of carbohydrate, fat, and protein content. The various meat substitutes are discussed and included in the diets. Thirty pages of receipts, arranged for single servings, enable the diabetic to add many pleasing variations to the diet with a certain knowledge of their caloric and carbohydrate values.

This little monograph belongs in the library of every doctor who has a diabetic patient under observation.

C. N. B.

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